

THE AUK:

A QUARTERLY JOURNAL OF

ORNITHOLOGY.

VOL. XVIII.

OCTOBER, 1901.

No. 4.

AN ORNITHOLOGICAL MYSTERY.

BY WILLIAM BREWSTER.

"Even yet thou art to me
No bird: but an invisible Thing,
A Voice, a mystery." — *Wordsworth.*

IN these days of multitudinous bird observers, when so many of the questions that both perplexed and stimulated the students of twenty-five or thirty years ago have been set finally at rest, it is refreshing to happen on an ornithological mystery; one, moreover, possessing no slight interest and importance since it concerns a bird which is known to the ornithologists of eastern Massachusetts, as the Cuckoo was to Wordsworth, *only by its voice.*

At about six o'clock on the afternoon of June 7, 1889, I heard in Cambridge, among the dense beds of cat-tail flags which surround Pout Pond, some bird notes, rail-like in character but wholly new to me. They proved equally so to Mr. Walter Faxon and Mr. Bradford Torrey, whom I took to the place later that same evening. Together we listened to the bird for upward of an hour during which he was rarely silent for more than a minute or two at a time. As we were unable to obtain any clue to his identity, and as his song invariably began with a series of *kick-kicks* we christened him the 'Kicker' by which name he has since been known among the Cambridge ornithologists.

In the course of the following fortnight, most of which Mr. Faxon and I devoted to searching for 'Kickers,' two more birds were heard in another part of the Fresh Pond Swamps, two in the meadows bordering Beaver Brook (one near the Waverly Oaks, the other in Rock Meadow, Belmont), one on the edge of Great Meadow, East Lexington, three in the Neponset River meadows near Readville, one on the banks of the Sudbury River just above Concord, and *five* in a meadow near the mouth of West Brook in Sudbury.

Most of the birds just mentioned were in very wet meadows or swamps, either among the wild grasses which grow so luxuriantly in such places, or in beds of tall rushes or cat-tail flags. We sometimes heard them in the early forenoon or late afternoon and once or twice at high noon, when the sun was shining brightly. As a rule, however, they did not begin calling before sunset and were seldom in full cry until twilight had fallen, after which their notes were uttered almost incessantly, at short, regular intervals, certainly far into the night and probably up to daybreak the next morning. From this it will appear that their haunts were similar to those of the Carolina and Virginia Rails and their periods of greatest activity to an even larger degree, nocturnal.

Their voices, also, were unmistakably rail-like. Their notes varied considerably in number — as well as somewhat in form and quality — not only with different birds but with the same individual at different times. The commonest forms were as follows: —

Kik-kik-kik, quèeah.

Kik-kik-kik, ki-quèeah.

Kik-ki-ki-ki, ki-quèeah.

Kic-kic, kic-kic, kic-kic, kic-kic, ki-queeah.

The *kic-kic* notes were very like those which the Virginia Rail uses to call together her scattered young, but they were at least thrice as loud. Although usually given in rather rapid succession they were sometimes divided by distinct if short intervals (indicated above by commas) into groups of twos or occasionally of threes. These pauses gave them the effect of being uttered with a certain degree of hesitancy or in a tentative spirit, as if the bird were clearing its throat or attuning its voice to exactly the right pitch before venturing on what was evidently his supreme

effort, the terminal *quèeah*. This note, which might perhaps be as well rendered by *quèer*, or even simply *kèer*, and which was occasionally doubled and sometimes wholly omitted, formed the only really characteristic and at all times unmistakable part of the song. It was a shrill, slightly tremulous squeal or crow, given with exceeding emphasis and vigor and reminding us by turns of the rolling chirrup which a chipmunk makes just as he dives into his hole, of the sudden outcry of a half-grown chicken when it is pecked by one of its companions, or of the crow of a young rooster. Near at hand it seemed louder than the *kic-kic* notes but the latter carried much the further—sometimes to a distance of fully half-a-mile when the air was damp and still—whereas the crow, under the most favorable conditions, could not be heard at more than half that distance.

That the notes just described constitute what, from the standpoint of the ornithologist, must be regarded as a true song seems obvious from the fact that they were uttered at such frequent and regular intervals, often for hours at a time. Indeed, the bird when engaged in producing them could not well have found opportunity for doing anything else. It is probable, however, that he often changed his position during his brief periods of silence, for his voice varied more or less in intensity or volume with successive utterances, the increase and decrease in volume being usually graduated but sometimes rather abrupt. Ordinarily every fourth or fifth repetition came especially loud and full but occasionally a particularly distinct utterance immediately succeeded an exceptionally faint one. Perhaps the bird while singing faced in different directions, making a quarter turn after each series of calls, as the Woodcock does while peeping; or he may have been merely running about in the grass calling at times in open spaces, at others among or beneath herbage sufficiently dense to muffle the sound of his voice. The general effect of his song, while certainly far from musical, was not unpleasing and the terminal crow had a delightfully merry or rather joyous quality as if the bird, reveling in the rare June weather amid the lush grass of his favorite meadows, were altogether too happy to contain himself. Indeed, there were times when this note, rising above the croaking of innumerable frogs and the rustling of wind among the reeds, sounded like a shrill, exultant little cheer.

Needless to say we spared no efforts to get a sight of the bird while he was singing in the early evening twilight or, sometimes with the aid of a keen-nosed dog, to flush him by day from the rank vegetation of his difficult haunts, but all such attempts proved futile; and when his singing season waned and finally came to its close, about the end of June, we had obtained no definite evidence as to his identity.

So far as we know the 'Kicker' has never since returned to any of the localities above mentioned but I noted one at Falmouth, Massachusetts, in 1890, and in the extensive marshes opposite my camp on the Concord River (about two miles below the town centre of Concord) one was singing on the evening of June 22, 1892, and another nearly every evening from May 18 to June 12, 1898; while I heard at least three and I think four different birds in these meadows during the last week of June, 1901.

The Falmouth bird began singing shortly after sunset on June 25, near a house at which I had arrived late that afternoon. Whenever I was awake during the following night his merry little crow came distinctly to my ears through the open windows of my room, at the usual short, regular intervals. On the previous evening I had traced the sound to its source, and by a rough process of triangulation had fixed the position of the bird at about the centre of a fresh water meadow that lay just behind the beach ridge in the bottom of a bowl-shaped hollow surrounded by sandy, upland fields and pastures. Early the next morning I examined the place more carefully. The meadow scarce exceeded an acre in extent. Most of it was comparatively dry, and having been burned over the previous autumn or winter was covered only by a short and rather sparse growth of young grass but the course of a sluggish brook and the edges of some intersecting ditches which imperfectly drained it had escaped the fire and were bordered by fringes of tall grasses, weeds and cat-tail flags, representing the growths of several successive seasons. These belts of cover, although dense enough to be impervious to the eye, were so very narrow that it was an easy matter to search them thoroughly and I soon satisfied myself that they sheltered no nest of any kind, not even a sparrow's; after which I turned my attention to the open ground. I had scarce begun to scan attentively its level,

brilliantly green surface when I saw, only a few paces away, a light yellowish object which I took, at first, to be the crown of an old straw hat, but which, on nearer inspection, proved to be a nest unlike any that I had ever before found. It was a domed structure, somewhat resembling that made by our field mouse but flatter and broader. The materials, also, were coarser and more skilfully and substantially put together, being firmly interwoven about the edges with the stems of the surrounding grasses. The dome was composed wholly of the stalks and blades of coarse grasses, perfectly dry and bleached to a dull yellowish hue. I examined this nest for some time before I could discover its entrance, for the slightly arched top seemed at first to unite everywhere with the sides and bottom. But by stooping low I at length detected in the side towards the east a circular hole of about the size of that made by our Downy Woodpecker, and sheltered above by a sort of hood which projected out over it from the edge of the dome. Leading directly to this opening was a well-worn run-way over which, for a distance of five or six inches from the nest, the short living grasses had been bent down and loosely intertwined so as to form an effective yet inconspicuous screen. On still closer examination I found that the nest was certainly that of some bird, for the interior was roomy and carefully finished while the bottom had that unmistakable saucer shape common to most birds' nests. The lining was of coarse, dry grass blades neatly and smoothly arranged. Apparently the structure was only just completed for it was quite empty and there were no signs to indicate that it had ever contained eggs or young.

Mr. Faxon saw it *in situ* a few days later. I kept it under close observation for a week or more but although I was careful not to disturb it, even by tramping down the grass by which it was surrounded, it must have been deserted immediately after my first visit for no eggs were laid in it. Nor was the 'Kicker' heard again in that locality. He was the only bird of any kind that I found in or near the meadow, which, by the way, was overrun by cats and dogs belonging to houses in the immediate neighborhood. No doubt some of these animals either killed or drove away both him and his mate.

Thus much for the history of a case which, in respect to its difficulties, is without parallel in the experience of those of us who have been engaged in its investigation. In formulating the inferences which its consideration suggests, I shall endeavor to keep well within limits justified by the evidence which, although largely of a circumstantial or even purely negative character, is, nevertheless, not without its value and significance.

In the first place the habits, haunts and especially the voice of the 'Kicker' indicate that he is a Rail of some kind. He cannot be either the Carolina or Virginia Rail for Mr. Faxon and I have been long familiar with all the sounds regularly made by these birds. Moreover, the 'Kicker' has been heard in the Fresh Pond Swamps during one season only, while the Carolina and Virginia Rails are abundant there every summer. The only other Rails known or likely to occur in summer in the fresh water marshes of southern New England are the King and the Little Black Rails.¹ The notes of the King Rail, as described by those who have heard them in the Southern or Mississippi Valley States, are wholly unlike those of our 'Kicker.' Robinson, as quoted by Gosse, in 'Birds of Jamaica' (1847, p. 376), says of the Little Black Rail:—"The negroes in Clarendon call it *Cacky-quaw*, by reason of its cry, which consists of three articulations; the negroes in Westmoreland call it *Johnny Ho*, and *Kitty Go* for the same reason." He also says that two birds which were brought to him alive gave a "very low" cry which "resembled that of a Coot, when at a great distance." Mr. March, on the other hand, states (Proc. Acad. Nat. Sci. Phila., 1864, p. 69) that the Jamaica bird utters a "*chi-chi-cro-croo-croo* several times repeated in sharp, high-toned notes, and heard at a considerable distance." None of our 'Kicker's' utterances so much as even suggest "*Cacky-quaw*," "*Johnny Ho*" or "*Kitty Go*"; but his *kic-kic-kic, ki quèeah* is not very unlike Mr. March's rendering, and when we consider the local variations to which the notes of so many species of birds are subject, it seems not improbable that the songs of the Little Black Rails which inhabit Jamaica may

¹ There are no good reasons for suspecting that the Yellow Rail ever breeds in any part of New England.

be more or less different from those of the birds which occur in the United States.

Reverting once more to the nest found at Falmouth, I do not hesitate to assert that almost without question it was built by a Rail of some kind. Its position, its component materials, the general character of its construction, and above all, the cleverly concealed run-way by which the birds approached and left it, all point plainly to such an assumption. If this be granted the final conclusion that the nest belonged to the Little Black Rail is inevitable. The small size of the entrance hole and run-way leaves, indeed, no room for doubt on this point. Moreover, the nest, in every essential respect, was apparently closely similar to the nest of the Little Black Rail which Mr. J. N. Clark found at Saybrook, Connecticut, as well as to the one examined by Mr. E. W. Nelson in Illinois.

Of the Saybrook nest Mr. Clark says: — "This nest was situated about forty rods back from the shore of the river, on the moist meadow, often overflowed by the spring tides. The particular spot had not been mowed for several years, and the new grass, springing up through the old, dry, accumulated growths of previous years, was thick, short, and not over eight or ten inches in height The nest after the complement of eggs were deposited in it resembled that of the common Meadow Lark, it consisting of fine meadow grasses loosely put together, with a covering of the standing grasses woven over it and a passage and entrance at one side." (Clark, Auk, I, October, 1884, p. 394).

Mr. Nelson's nest "was placed in a deep cup-shaped depression in a perfectly open situation on the border of a marshy spot, and its only concealment was such as a few straggling *carices* afforded. It is composed of soft grass blades loosely interwoven in a circular manner. The nest, in shape and construction, looks much like that of a meadow lark." (Nelson, Birds N. E. Ill., Bull. Essex Ins., VIII, p. 134).

It is undeniable, however, that the evidence relating to the Falmouth nest fails to establish any certain connection between its original owner and the 'Kicker.' That the two were really one and the same seems probable enough but the identity of the 'Kicker' cannot be regarded as definitely established until some-

one, more fortunate than Mr. Faxon and I have been, succeeds either in shooting or in getting a good view of the bird while it is in the act of uttering its characteristic notes. On the whole I am glad, rather than the reverse, to be compelled to leave the matter thus unsettled for I should not like to feel that even so thoroughly worked a region as that immediately about Cambridge is wholly without the charm which attends all mysteries.

NESTING HABITS OF THE ANATIDÆ IN NORTH DAKOTA.

BY A. C. BENT.

Plates IV-VI.

From photographs by the author.

I SPENT the last few days of May and the first half of June of the present year, accompanied by Rev. Herbert K. Job, of Kent, Conn., and part of the time, by Dr. Louis B. Bishop, of New Haven, Conn., in the lake region of central North Dakota, principally in the vicinity of Devils Lake, along the Sheyenne River to the southward, through Nelson County and in Steele County. The prairie region naturally comprises by far the greater part of, in fact, nearly all, of the territory covered by our observations. Throughout the eastern portion of North Dakota, particularly in the Red River Valley, where the land is flat and level, and in Steele County, we found the prairie under complete cultivation and sown with wheat or flax wherever the land was level enough or dry enough for the purpose. In these farming districts the meadow lands, too wet for cultivation, were generally mowed for hay. In many cases sloughs and small pond holes were drained for irrigation purposes or to make meadow land; so that bird life was confined to the larger sloughs, the tree claims, and the occasional strips of uncultivated prairie. Farther west, from Nelson County westward, there is much less cultivated land and the wild rolling land of the virgin prairie is only here and there broken by farms with a few hundred acres of wheat fields surrounding each farmhouse. Here we could drive for miles over the un-

broken surface of the prairie, uninterrupted by fences or hills, and not be confined to the section-line roads of the more thickly settled portions of the State. The prairie grass was short and offered very little resistance to the light buckboard, in which we travelled, drawn by a pair of unshod bronchos. In the hollows, where the ground was wet or marshy, the grass grew longer and thicker so that such places had to be avoided.

The bird life of the prairie is not so rich in species nor are the individuals so closely crowded together as in the timbered regions or the sloughs, but certain characteristic species were quite evenly distributed everywhere. The Western Meadowlark and the Chestnut-collared Longspur were probably the commonest species, the rich song of the former and the delightful, warbling flight song of the latter being constantly heard on all sides. The Lark Bunting was common locally and was certainly one of the most conspicuous species met with; the striking black and white plumage of the male and his rich and varied flight song made this one of the most interesting species. Franklin's Gulls were often seen flying over the prairie in scattered flocks to and from their feeding grounds. Bartramian Sandpipers were scattered about in pairs, nesting in the short prairie grass. Occasionally a pair of Prairie Hens were flushed, and once a flock of seven was seen, but this species was not nearly so common as we expected to find it. The Marsh Hawk and the Short-eared Owl were the characteristic Raptores of the open prairies, though other species were common near the timber belts. Burrowing Owls were seen only occasionally. Western Nighthawks were common everywhere. Bobolinks, McCown's Longspurs, Western Vesper Sparrows, Western Savanna Sparrows and Baird's Sparrows were scattered about over the prairies, the first two being fairly abundant locally.

The timbered regions are confined to the shores of the larger lakes, to a narrow strip along the Sheyenne River, and to the 'tree claims,' small patches of trees set out by the early settlers near the farms.

The principal timber trees are swamp oaks, elms, cottonwoods, and box elders. The oaks and elms form the heaviest timber and serve as nesting sites for Ferruginous Rough-legs, Swain-

son's and Krider's Hawks, the largest of them seldom growing to over 40 or 50 feet in height. In these narrow belts of timber bird-life fairly swarmed; Bronzed Grackles were by far the most abundant in certain sections and Mourning Doves were abundant everywhere. Arkansas Kingbirds, always noisy and quarrelsome, made themselves universally conspicuous, and the lively song of the Western House Wren was constantly heard in the timber. Common Kingbirds, Black-billed Cuckoos, Baltimore Orioles, Rose-breasted Grosbeaks, Purple Martins and Yellow Warblers were common and evenly distributed throughout the timber. Clay-colored Sparrows were very common about the edges of the timber, nesting in the 'badger brush' or 'buck brush' which is the commonest shrub in this region. Cowbirds were also very abundant on the prairie near the timber and laid their eggs in all the smaller birds' nests. Many other species were less commonly noted, but space will permit the mention of only the most characteristic species.

In the sloughs the bird-life was not as rich in species, but fully as rich in individuals. The larger sloughs are shallow lakes with open water in the deeper, central portions and in the shallower parts, where the water is from one to three feet deep, overgrown with tall rank reeds or sedges, often higher than a man's head, and with thick patches of cat-tail flags. The smaller sloughs are often entirely overgrown with reeds and flags, showing open water only in small scattered patches or in the deeper channels. The two characteristic species of the sloughs are the Yellow-headed Blackbirds and the American Coots. The Blackbirds fairly swarmed in all the sloughs and the constant din of their monotonous notes soon became very tiresome. The Coots were constantly playing about in the water among the reeds, amusing us with their curious antics. Pied-billed Grebes nested in the more open portions of the sloughs among the scattered reeds, and Black Terns were constantly hovering overhead. Bitterns and Night Herons were occasionally seen, Virginia and Sora Rails nested in the short grass around the shallower edges of the sloughs; Killdeers, Marbled Godwits, Western Willets and Wilson's Phalaropes were flying about the shores and were probably nesting not far off.

Red-winged Blackbirds nested abundantly on the outskirts and Long-billed Marsh Wrens were breeding in the thick flags.

The alkaline lakes form still another feature of this interesting region. The larger lakes are, most of them, more or less alkaline, and the drinking water in many of the towns is sufficiently alkaline to have a flat, unpleasant taste, making it unfit to drink for persons not accustomed to it. The strongly alkaline lakes are met with occasionally in the prairies, more commonly in the western part of the State. No vegetation of any kind grows in these lakes and the shores are lined with thick, heavy, sticky mud, very difficult to walk through and covered with a whitish alkaline deposit.

These mud flats form excellent feeding grounds for the migrating Limicolæ and in the wilder portions of the state the Avocets select such places for their breeding grounds. The Golden Plover migrate through this country in large numbers; the last of them were just about leaving when we arrived. Semipalmated, White-rumped, and Pectoral Sandpipers were often seen in small flocks about the lakes, as well as in the sloughs and on the prairies, also a few Yellow-legs and Turnstones; possibly these were barren or young birds not intending to breed this season.

These alkaline lakes are evidently not distasteful to the ducks, as we often saw large numbers of Mallards, Pintails, and Shovelers swimming about in them. In fact every body of water that we passed was frequented more or less by the commoner species of the Anatidæ.

With this brief summary of the general characteristics of the region, we will proceed to take up the nesting habits of the ducks in detail.

***Lophodytes cucullatus* (Linn.). HOODED MERGANSER.**

This is one of the rarer ducks in the region we visited though it is fairly common along the timbered portion of the Sheyenne River. I shot one specimen in Steele County on June 12, which proved to be a young male in the plumage resembling the female. We saw a flock of six in Nelson County on June 15, and a single bird there on the 16th. These birds were probably not breeding birds, as they were in the larger lakes a long distance from any timber. Dr. Bishop and Mr. Job visited the Sheyenne River

timber on June 18, where they found the Mergansers common and breeding. The birds were probably all hatched by this time, as they found only broken egg shells in the hollow trees used for nesting purposes.

Anas boschas Linn. MALLARD.

Although the Mallard is a common duck in North Dakota, it is not nearly as common as I expected to find it and is certainly outnumbered by at least three species, the Blue-winged Teal, the Pintail, and the Shoveller. It is quite generally and evenly distributed, however, all over the prairie region and scattered pairs were seen almost everywhere in suitable localities. It is an early breeder, many of the broods being hatched out before June 1, though we found fresh eggs on May 31, and one set of 13 eggs, apparently heavily incubated, on June 15. The female is very courageous in the defense of her young. We had a striking illustration of this fact on May 30, when we surprised one of these birds with her brood of young in a little pondhole in the timber; although the young were well hidden in the surrounding grass and bushes, the old bird was flapping about within a few feet of us, splashing and quacking loudly, frequently rising and circling about us, then dropping into the pond again, showing every symptom of anxiety and interest in our movements and being totally regardless of her own safety. But the young were too well concealed for us, so we left the anxious mother in peace.

The locality chosen by the Mallard for its nest is generally on or near the edge of a slough or lake, either among dry dead flags where the ground is dry or only slightly marshy, or upon the higher land not far from the water and among thick dry reeds. Two of the nests we found were on an island in a lake, placed on the ground in the middle of a patch of tall dry reedlike grass locally called 'queen of the prairie,' which grows higher than a man's head. One of these nests, containing 10 fresh eggs on May 31, is shown in the photograph (Plate IV, Fig. 1).

Our guide, a collector of considerable experience, informed us that they also nested on the open prairies but we did not find any nests in such locations.



FIG. 1. NEST AND EGGS OF MALLARD.



FIG. 2. NEST AND EGGS OF GADWALL.

The nest is well hidden and consists of a hollow in the ground well lined with broken dry reeds or flags, apparently picked up in the immediate vicinity, well mixed with dark gray down and a few feathers from the bird's breast; the down is thickest around the edges of the nest and increases in quantity as incubation advances. The nests we found contained from 10 to 13 eggs. The eggs are elliptical ovate in shape and vary in color from a light greenish buff to a light grayish buff, with very little lustre.

The measurements of 22 eggs in my collection exhibit the following figures: Length, 2.36 to 2.07; breadth, 1.66 to 1.52; average, 2.27 by 1.61 inches.

The eggs of the Mallard can be easily mistaken for those of the Pintail, but they will average slightly larger, a little lighter in color and are not quite so much elongated. The female Mallard when flushed can be readily distinguished from the Pintail by its larger size, shorter neck and by its blue speculum with conspicuous white borders.

Chaulelasmus streperus Linn. GADWALL.

The Gadwall is not one of the commonest ducks though we found it fairly abundant in the vicinity of the larger lakes, where it breeds on the islands together with the Baldpates and Lesser Scaup Ducks, the latter two species, however, far outnumbering it even here. The nest is always placed on dry ground but not very far from the water. A hollow is scooped in the ground and well lined with strips or pieces of reeds, bits of dry grass and weed stems, or whatever material can be most easily gathered in the vicinity, mixed with down from the birds' breast and profusely lined with dark gray down around the eggs. Seven nests of this species, found on two small islands on June 15, 1901, were located as follows: Nest No. 1 was in the prairie grass on the higher part of the island, which was at that time about one foot high and growing thickly all over the island except for a few small clumps of wild rose bushes in full bloom and two patches of the tall 'queen of the prairie' reeds referred to under the preceding species. This nest contained seven eggs, apparently fresh. Nest No. 2 was well concealed in a narrow strip of 'queen of the

prairie' reeds growing tall and thick along the bank where it sloped down to the beach. It was partially arched over by the prostrate stems of the dead reeds of last years growth, as shown in the photograph (Plate IV, Fig. 2).

Very little down was used in the construction of this nest, which contained 11 nearly fresh eggs. The parent bird was shot for identification. Nest No. 3 was not far away in a more open place in the same patch of reeds. It was well made of strips and broken pieces of the reeds mixed with down and profusely lined with down around the edges. The nest contained 10 eggs in which incubation was considerably advanced. The location and structure of the nest is illustrated in the photograph (Plate V, Fig. 1).

The other four nests were found on a neighboring island, somewhat smaller, about two acres in extent, high and rocky at one end with thick clumps of wild rose bushes growing among numerous boulders, and flat at the other end partially covered with prairie grass and partially bare, except for scattered clumps of rank weeds. About 100 pairs of Ring-billed Gulls were breeding on this island and large numbers of Common Terns. Two of the Gadwalls' nests were in the prairie grass and two were in small clumps of the rank weeds. One of these latter two is now in my collection; it was well made of dry grass and weed stems and thickly lined with dark gray down, particularly around the edges; it contained 11 nearly fresh eggs of the Gadwall and one egg of the Lesser Scaup Duck, which was breeding abundantly on both of these islands.

Baldpates were also breeding abundantly here and we experienced considerable difficulty, at first, in identifying the nests of the Gadwall. These ducks are all close sitters, and after shooting a few birds we soon learned to identify them as we flushed them from the nests. The females of the two species resemble each other very closely, but the Gadwall is considerably darker on the back and rump, whereas the Baldpate is lighter and shows conspicuous light patches in the wings as she flies away. There is also a great similarity between the eggs of the two species, but there is a slight and fairly constant difference; the Gadwall's eggs are nearly oval in shape, shorter and more rounded than those of the



FIG. 1. NEST AND EGGS OF GADWALL.



FIG. 2. NEST AND EGGS OF BALDPATE.



Baldpates, and of a dull creamy white color, whiter and less creamy than the Baldpates'. The down in the nest of the Gadwall is also somewhat darker than in that of the Baldpate. But these differences are slight and variations bring the species very close together, so that it is necessary to shoot the bird or have a clear view of her to make identification sure.

The following figures are taken from the measurements of 21 eggs in my collection: Length, 2.18 to 2.00; breadth, 1.59 to 1.52; average, 2.08 by 1.55 inches.

Mareca americana (Gmel.). BALDPATE.

In the vicinity of the larger lakes this is a very common species, where it breeds abundantly on the islands with the foregoing species. We found no less than 15 nests of this species on these islands on June 15, and probably there were more nests which we did not find, as it was raining very hard when we explored the island where they were breeding most abundantly, so we made only a hurried search of about half an hour, finding 12 nests in this short time. The Baldpate is a late breeder, very few of the eggs being laid before June 1, and the majority of the sets are not completed until the second week in June or later. The nests are all built on dry ground in a slight hollow generally well lined with bits of dry grass and weed stems, with a plentiful supply of light gray down surrounding the eggs which increases in quantity as incubation advances. The bird frequently covers the eggs with the down when she leaves the nest, completely concealing them and making the nest almost invisible even in an open situation. The eggs, which are from 8 to 12 in number, are creamy white in color, varying from deep cream to nearly white, and are in shape nearly elliptical ovate. The shell is clear, smooth, rather thin and somewhat glossy, resembling in color and texture certain types of hen's eggs. The eggs closely resemble those of the Gadwall, but are generally more elongated and of a purer, deeper cream color. The female Baldpate can also be distinguished from the female Gadwall by its lighter color and whitish wing patches.

The description of a few types of nests of the Baldpate may be of interest; these were all found on the island referred to above.

Nest No. 1, May 31, 1901, was in the centre of a thick clump of golden-rod growing on the beach; it was lined with dried leaves and rubbish, with very little down around the eight fresh eggs. This nest is shown in the photograph (Plate V, Fig. 2).

Nest No. 2, May 31, 1901, was in the centre of a clump of thistles near the upper edge of a stony beach; it contained eight fresh eggs which were laid on the bare stones, one of them plainly visible in the centre of the nest, and surrounded by a little down. Although we flushed the bird from the nest the set was incomplete, for we found 10 eggs in this nest on June 15. The photograph (Plate VI, Fig. 1) illustrates this nest.

Nest No. 3, May 31, 1901, 11 eggs, was on the higher part of another island in rather tall prairie grass; it was profusely lined with down, mixed with bits of dry grass and weeds. The set must have been complete even at this early date for some of the eggs were heavily incubated. The accompanying photograph (Plate VI, Fig. 2) gives a fair idea of this nest.

On this same island we found another nest containing 10 eggs, well concealed among the 'queen of the prairie' reeds. The same day on the third island we found four more nests; one set of six eggs and one of eight eggs, were well concealed under the wild rose bushes, one set of 10 eggs in the prairie grass, and a set of 11 eggs under a little dead brush in the open, completely covered with the down which served to conceal them admirably, though in plain sight. The twelve nests found on this island on June 15, were mostly under the rose bushes among the rocks and contained from 9 to 11 eggs. One of these nests also contained a White-winged Scoter's egg and one an egg of the Lesser Scaup Duck, both of which species were nesting on the island.

The following figures are taken from the measurements of 24 eggs in my collection: Length, 2.37 to 2.03; breadth, 1.60 to 1.47; average, 2.17 by 1.53 inches.

(To be continued.)



FIG. 1. NEST AND EGGS OF BALDPATE.



FIG. 2. NEST AND EGGS OF BALDPATE.



A PRELIMINARY LIST OF THE SUMMER BIRDS
OF MOUNT MANSFIELD, VERMONT.

BY ARTHUR H. HOWELL.

IN selecting a desirable point in northern New England to study the bird life, I chose Mt. Mansfield for the double reason that it is the highest mountain in the State of Vermont, and that its fauna is comparatively little known. Indeed, our knowledge of the avifauna of the entire northern portion of the State is very limited, for although two State lists of birds have been published, neither of them meets the requirements of a modern scientific list compiled from authentic records. The first, by Zadoch Thompson, published in 1842, is long since out of date¹; the second, by Dr. Hiram A. Cutting, is a nominal list of 191 species, many of which are evidently admitted on insufficient evidence. The annotations consist, in the main, of very general statements, and contain numerous glaring inaccuracies.²

Numerous scattered notes from the State have appeared in the ornithological magazines, but the only faunal list is that by Dr. F. H. Knowlton, treating of the birds of Brandon.³ Brandon lies in the west-central portion of the State, in the Champlain Valley, and the list is therefore valuable as indicating the fauna of the Alleghanian portions of the State. It furnishes very little information, however, concerning the birds that breed in the Canadian zone, and since it was published in a local newspaper, is quite inaccessible to all but a very few persons.

The list herewith presented is intended to be merely a preliminary one, and is offered chiefly as a contribution to our knowledge of the breeding ranges of Canadian species. I made two trips to Mt. Mansfield, the first in 1899, from June 14 to 24, the second in 1900, from June 23 to July 2. Observations covering

¹ See History of Vermont, Natural, Civil and Statistical, pp. 56-112. Burlington, 1842.

² See Catalogue of the Birds of Vermont, Eighth Vermont Agric. Report, pp. 211-229. Montpelier, 1884.

³ See 'The Brandon Union,' Dec. 13, 1878; revised list, Feb. 10, 1882.

such a limited period are necessarily incomplete, and I am fortunate in being able to supplement my notes by those of Mrs. Carrie E. Straw, who resides in Stowe, five miles from the mountain. I am indebted, also, to Mr. Bradford Torrey and to Mr. Clayton E. Stone, for notes on Mansfield birds.

Mr. Torrey has written a charming account of his visit to the mountain, in which he mentions more or less casually eleven species, giving considerable space to Bicknell's Thrush (under the name of the Gray-cheeked) and several other characteristic species. His article,¹ and a note of his on Bicknell's Thrush in 'The Auk,'² seem to be the only published records from this region.

The mountain rises abruptly from the Champlain Valley, some twenty miles to the eastward of Lake Champlain, and about thirty-five miles south of the Canadian boundary. It extends nearly north and south, and is made up of two principal peaks, united by a comparatively level ridge about two miles in length — "the ridge-pole of Vermont," Mr. Torrey styles it. The northern peak is the higher, its altitude, as determined by the U. S. Coast and Geodetic Survey, being 4364 feet. Viewed from the east, the profile of the mountain presents somewhat the appearance of a man's face turned to the sky. This fancy has given rise to the local names for the peaks, the southern one being 'The Nose,' the northern one, 'The Chin.'

On the northeast, separating Mansfield from Sterling Mountain, is Smugglers' Notch, a famous collecting ground for the botanists since Pringle made known the resources of its rugged cliffs. Though of less interest than the mountain proper, the Notch proved a fruitful locality for birds, as well as for mammals and plants. Several species of birds, notably the Mourning Warbler and the Solitary Vireo, were found almost exclusively in this region. The summit yielded a number of species not found at lower altitudes, among which Bicknell's Thrush was the commonest and most interesting.

On the southeast lies Stowe Valley, whence a wagon road

¹ See 'The Foot-Path Way,' pp. 90-110.

² Vol. VII, p. 194.

ascends the mountain, reaching the summit at the base of the cliff which forms 'The Nose.' I was located during both of my trips at the house of Mr. George Harlow, which stands on a small plateau or step of the mountain, several hundred feet above the valley proper, and only a short distance from the point where the road enters the forest.

The altitudes given in the present paper are only approximately correct, since I have the exact figures for only two points: Stowe Valley (548 ft.), and the summit of 'The Chin,' (4364 ft.). The woods at the east base of the mountain along the Smugglers' Notch road, are assumed to be at about 1000 feet altitude; the ridge at the point where the wagon road terminates (frequently referred to as 'the summit') is probably about 4000 feet.

The Mansfield region, in its faunal relationships, is almost pure Canadian, the few Alleghanian species found in the valley being extremely rare.

The following mammals, nearly all of them characteristic of the Canadian zone, were the most common species:

Sciurus hudsonicus gymnicus — Red Squirrel.

Tamias striatus lysteri — Northern Chipmunk.

Peromyscus canadensis — Canadian White-footed Mouse.

Eutamias amoenus — Red-backed Vole.

Zapus insignis — Woodland Jumping Mouse.

Zapus hudsonius — Meadow Jumping Mouse.

Erethizon dorsatus — Canada Porcupine.

Lepus americanus — Varying Hare.

Blarina brevicauda — Short-tailed Shrew.

Sorex fumeus — Smoky Shrew.

Sorex personatus — Masked Shrew.

The flora has been so thoroughly treated in several botanical papers¹ that I need do no more here than refer to the characteristic trees. The forest at the base of the mountain consists of a heavy mixed growth of deciduous trees, with a good sprinkling of evergreens. The commonest species are the sugar maple (*Acer saccharum*), beech (*Fagus americana*), yellow birch (*Betula lutea*),

¹See especially 'The Flora of Mt. Mansfield,' Bot. Gazette, XX, pp. 72-75 (1895).

paper birch (*Betula papyrifera*), red spruce (*Picea rubra*), hemlock (*Tsuga canadensis*) and balsam fir (*Abies balsamea*).

The undergrowth, in places quite dense, is made up of the young trees of the above named species, with the addition of the mountain maple (*Acer spicatum*), striped maple (*Acer pennsylvanicum*), 'witch-hopple' (*Viburnum alnifolium*), etc. This mixed growth covers the lower slopes of the mountain, the maples, beeches and hemlocks becoming less numerous at the higher altitudes, until at about 3000 feet, they entirely disappear, and the forest is composed of spruces and firs with a few birches intermixed. A dense growth of stunted spruces and firs covers the more sheltered portions of the summit, and reaches well down toward the Notch. Alders (*Alnus alnobetula*) grow abundantly, both at the summit and on the less precipitous cliffs in the Notch.

In the list which follows, the species preceded by an asterisk are given on the authority of Mrs. Straw. Among the birds which I confidently expected to find, but did not, are the Olive-sided Flycatcher and the Winter Wren, both of them common species in the Franconia Mountains in New Hampshire.

1. * *Ardea herodias*. GREAT BLUE HERON. — Rare and local.
2. *Actitis macularia*. SPOTTED SANDPIPER. — A few seen along the streams in the valley.
3. *Bonasa umbellus togata*. CANADIAN RUFFED GROUSE. — Quite numerous, both in the valley and on the mountain throughout the Canadian zone. Those observed were chiefly females with young, for whose safety they showed great solicitude. Although no specimens were secured, it is safe to refer the birds to the Canadian form.
4. *Falco sparverius*. SPARROW HAWK. — One observed in the maple woods near the base of the mountain.
5. * *Megascops asio*. SCREECH OWL. — Common resident.
6. * *Bubo virginianus*. GREAT HORNED OWL. — Resident.
7. * *Coccyzus erythrophthalmus*. BLACK-BILLED CUCKOO. — Common.
8. * *Ceryle alcyon*. KINGFISHER. — Common.
9. *Dryobates villosus*. HAIRY WOODPECKER. — A single specimen was noted on the mountain, near the upper edge of the tall timber.
10. * *Dryobates pubescens medianus*. DOWNY WOODPECKER. — Not uncommon.
11. *Sphyrapicus varius*. YELLOW-BELLIED SAPSUCKER. — Two were seen in the valley (one in Stowe village), and a few in the maples on the lower slopes of the mountain.
12. *Ceophloeus pileatus abieticola*. NORTHERN PILEATED WOOD-

PECKER. — Mr. Clayton E. Stone of Lunenburg, Mass., writes me that he "saw two of these birds in the fall of '98, and heard several others, one in Johnson, and two in Craftsbury." They doubtless occur in the environs of Mansfield.

13. **Melanerpes erythrocephalus*. RED-HEADED WOODPECKER. — Mrs. Straw says of this bird: "rare; saw two in June, 1896."

14. **Colaptes auratus luteus*. NORTHERN FLICKER. — Common.

15. **Antrostomus vociferus*. WHIP-POOR-WILL. — Rare and local.

16. **Chordeiles virginianus*. NIGHTHAWK. — Not common.

17. *Chaetura pelagica*. CHIMNEY SWIFT. — Common; occurs on the mountain nearly to the summit.

18. *Trochilus colubris*. RUBY-THROATED HUMMINGBIRD. — Numerous in the maple woods at the base of the mountain. I noticed several females stealing the cotton which I had placed on the bushes to mark my mammal traps.

19. *Tyrannus tyrannus*. KINGBIRD. — Not uncommon in the valley.

20. *Myiarchus crinitus*. CRESTED FLYCATCHER. — I thought I heard the notes of this bird on two or three occasions, but was not near enough to make the record certain. Mrs. Straw has observed them a few times.

21. **Sayornis phœbe*. PHŒBE. — Common.

22. *Contopus virens*. WOOD PEWEE. — A few were heard in the valley at the base of the mountain, and others at about 2000 feet.

23. *Empidonax flaviventris*. YELLOW-BELLIED FLYCATCHER. — This species inhabits the deep woods well up the mountain side (approximately from 2500 to 3500 feet altitude). On these steep slopes, shaded by a dense growth of spruces, and strewn with immense moss-covered logs and huge boulders, the birds find a congenial home. Of inconspicuous appearance and without any very characteristic notes, they do not readily attract attention. I observed them but three or four times, and secured only one, shot from a tall dead tree standing by the side of the mountain road.

24. *Empidonax traillii alnorum*. ALDER FLYCATCHER. — Apparently rare, as I saw but two or three, these in a wet scrubby pasture at the foot of the mountain; one specimen was secured. Their notes are not loud, but are recognizably different from those of the other Flycatchers.

25. *Empidonax minimus*. LEAST FLYCATCHER. — Common; their sharp notes were frequently heard at various points in Stowe Valley.

26. **Otocoris alpestris praticola*. PRAIRIE HORNED LARK. — Mrs. Straw reports that these birds have appeared in some numbers in Stowe Valley within quite recent years, having been first noticed in 1898. The present season (1901) several pairs have nested and as many as 25 young have been seen. They disappeared early in July.¹

27. *Cyanocitta cristata*. BLUE JAY. — Observed sparingly from the base of the mountain to about 3000 feet altitude.

¹ Concerning the eastward extension of their breeding range, compare Faxon and Hoffman, 'The Birds of Berkshire Co., Mass.,' p. 32.

28. *Perisoreus canadensis*. CANADA JAY. — Mr. Bradford Torrey records one seen on the mountain.¹ I did not observe the species.
29. *Corvus americanus*. AMERICAN CROW. Common.
30. *Dolichonyx oryzivorus*. BOBOLINK. — Numerous in the meadows of the valley.
31. *Molothrus ater*. COWBIRD. — Not common. Observed only once — at Moscow, seven miles from the mountain.
32. *Agelaius phœniceus*. RED-WINGED BLACKBIRD. — Said to be quite common. I observed them in small numbers at Moscow.
33. *Icterus galbula*. BALTIMORE ORIOLE. — Rare and local; seen chiefly in the village streets.
34. *Carpodacus purpureus*. PURPLE FINCH. — Not very common, though I saw them several times at the foot of the mountain, and also part way up.
35. *Loxia (curvirostra minor?)* CROSSBILL. — I observed (in 1899) several flocks of a dozen or more Crossbills, probably of this species, flying about over the summit. They were very restless, and never alighted near enough for positive identification.
36. *Astragalinus tristis*. AMERICAN GOLDFINCH. — Common in Stowe Valley.
37. *Spinus pinus*. PINE SISKIN. — Three or four observed in the small spruces near the summit of the mountain. They were quite unsuspicious, allowing me to approach within a few feet of them.
38. *Poœcetes gramineus*. VESPER SPARROW. — Abundant; the commonest singer in the valley.
39. *Ammodramus sandwichensis savanna*. SAVANNA SPARROW. — In 1899, several pairs were breeding in the pastures at the base of the mountain; in 1900, I noted the species but once or twice.
40. * *Ammodramus savannarum passerinus*. GRASSHOPPER SPARROW. — Mrs. Straw says of this species: "First seen June 5, 1899 — remained all summer."
41. *Zonotrichia albicollis*. WHITE-THROATED SPARROW. — The White-throat is one of the commonest and most characteristic birds of the region. Although heard occasionally at the base of the mountain, it is on the bleak and wind-swept stretches near the summit that his clear notes ring out most frequently, and with greatest effect.
42. *Spizella socialis*. CHIPPING SPARROW. — Common in the valley.
43. * *Spizella pusilla*. FIELD SPARROW. — Mrs. Straw reports it as a regular breeder, she having found the nest both in 1898 and 1899.
44. *Junco hyemalis*. SLATE-COLORED JUNCO. — Like the White-throat, the Junco is common at various points from the base of the mountain to the summit, but is rather more abundant than the former at the lower levels. I frequently saw them flying about on the highest part of 'The Chin.'

¹The Foot-Path Way, p. 100.

45. *Melospiza melodia*. SONG SPARROW.—Common in the valley.
 46. *Zamelodia ludoviciana*. ROSE-BREASTED GROSBILL.—Noted several times in the maple woods at the base of the mountain, and once (a breeding pair) at an altitude of about 2000 feet.
 47. *Cyanospiza cyanea*. INDIGO BIRD.—Observed a few times in Stowe Valley; said to be not uncommon.
 48. *Piranga erythromelas*. SCARLET TANAGER.—I heard the notes of the Tanager a number of times in the woods at the base of the mountain.
 49. *Chelidon erythrogaster*. BARN SWALLOW.—Common in the valley.
 50. * *Clivicola riparia*. BANK SWALLOW.—Common.
 51. *Ampelis cedrorum*. CEDAR BIRD.—Said to be common. I observed them but once—four individuals on a dead tree near the summit of the mountain.
 52. * *Lanius ludovicianus migrans*. MIGRANT SHRIKE.—Rare and local. Mrs. Straw saw young birds June 23, 1896; the species nested the two following seasons.
 53. *Vireo olivaceus*. RED-EYED VIREO.—Common in the valley and on the lower slopes of the mountain to at least 2500 feet altitude.
 54. *Vireo gilvus*. WARBLING VIREO.—A few heard in Stowe Valley.
 55. *Vireo solitarius*. SOLITARY VIREO.—None were observed in 1899, but very possibly they were overlooked. In 1900, I heard them a number of times, and after some difficulty, secured one specimen—a breeding female.
- Although the males move about considerably while feeding and singing, they were apparently confined to three localities, a half mile or more apart, and I concluded that there were probably but three pairs breeding in the section of country that I explored. Their habitat is the heavy mixed growth, at the east base of the mountain; the specimen taken was on a dry ridge clothed with spruces, firs, and hemlocks. They are rather shy, and have a habit of moving restlessly from point to point, always keeping well out of sight, but singing at frequent intervals.
56. * *Mniotilta varia*. BLACK-AND-WHITE WARBLER.—Common.
 57. *Helminthophila rubricapilla*. NASHVILLE WARBLER.—Several times I heard a song from the spruces near the top of the mountain (3500 feet) which I feel sure came from this species, though I was unable to get even a glimpse of the singer. Mr. Torrey writes me that he heard several during his visit.
 58. *Compsothlypis americana usneæ*. PARULA WARBLER.—Quite common, inhabiting the lower slopes of the mountain to about 2500 feet altitude.
 59. *Dendroica æstiva*. YELLOW WARBLER.—Not uncommon in the valley.
 60. *Dendroica cærulescens*. BLACK-THROATED BLUE WARBLER.—Very common on the lower slopes of the mountain from the base to

about 2000 feet. They inhabit the more open deciduous woods, the males singing most frequently about the openings where a few trees have been cut out, and sprouts and fallen logs cover the ground. I started a female from a little bush on the edge of a clearing, where she had commenced to build her nest, a foot above the ground.

61. *Dendroica coronata*. MYRTLE WARBLER. — Quite common in the stunted spruces at the summit, but not observed elsewhere.

62. *Dendroica maculosa*. MAGNOLIA WARBLER. — Heard sparingly at the base of the mountain. They inhabit, among other places, the small firs and spruces on the edges of the pastures.

63. *Dendroica pennsylvanica*. CHESTNUT-SIDED WARBLER. — Common in the open spots about the edges of the woods at the base of the mountain, and for a short distance up the slopes.

64. *Dendroica striata*. BLACK-POLL WARBLER. — Numerous in the region of stunted trees on the upper slopes, though none were seen on the extreme summit. They sang usually on the tops of the spruces, and from these breezy heights, the song sounded even weaker than when we hear it from passing migrants in the low country.

65. *Dendroica blackburniæ*. BLACKBURNIAN WARBLER. — Fairly common, ranging apparently with the hemlocks (for which they show a decided preference) from the base to about 2500 feet.

66. *Dendroica virens*. BLACK-THROATED GREEN WARBLER. — Less common than the preceding species; it occupies much the same area, but ranges a little higher.

67. *Seiurus aurocapillus*. OVENBIRD. — Perhaps the commonest and most conspicuous bird in the open maple woods on the lower slopes; does not range much above 2000 feet. Several nests were found on the very edge of the mountain road.

68. *Geothlypis philadelphia*. MOURNING WARBLER. — Quite common in the brushy clearings and thickets around the base of the mountain. I shot one in the thick woods a short distance up the slope, but nearly all that I noted were along the road leading through Smugglers' Notch.

They are extremely shy, and only two or three times was I able to obtain even a glimpse of them, although by approaching stealthily, I could get fairly close. The song is characteristic, though it bears a strong resemblance to that of the Kentucky Warbler.

69. *Geothlypis trichas*. MARYLAND YELLOW-THROAT. — Observed a few times in Stowe Valley; said to be not uncommon.

70. *Wilsonia canadensis*. CANADIAN WARBLER. — Common in the thickets in the deciduous woods, ranging nearly throughout the Canadian zone. Although they keep well concealed in the shrubbery and do not move about much, their odd song, uttered at frequent intervals, serves to indicate their presence.

71. *Setophaga ruticilla*. REDSTART. — Seen but twice—at the base of the mountain.

72. *Galeoscoptes carolinensis*. CATBIRD. — Occurs rather commonly along the streams in the valley.

73. * *Troglodytes aëdon*. HOUSE WREN. — Rare ; Mrs. Straw reports that she has not seen them for a number of years.

74. *Anorthura hyemalis*. WINTER WREN. — Mr. Torrey writes me that he noted them several times during his visit in 1885, on the upper part of the mountain. I was disappointed not to find them, but I am certain they were not there in 1899 or 1900, for although the birds might be overlooked, the song is not likely to escape notice.

75. *Certhia familiaris americana*. BROWN CREEPER. — Only one observed, near the upper edge of the timber.

76. * *Sitta carolinensis*. WHITE-BREASTED NUTHATCH. — Common.

77. *Sitta canadensis*. RED-BREASTED NUTHATCH. — Observed but once — a little group of four in the spruces near the summit.

78. *Parus atricapillus*. CHICKADEE. — Fairly common on the lower slopes.

79. *Regulus satrapa*. GOLDEN-CROWNED KINGLET. — Their song was heard on several occasions in the heavy timber at the base and once at about 2500 feet altitude. It is a prolonged bubbling warble, rather lacking in musical quality.

80. *Hylocichla mustelina*. WOOD THRUSH. — In 1899, I heard the song and alarm note of this species several times, in the damp maple woods at the base. Once I saw the bird near enough to recognize it, but did not secure it. I think there were at least two pairs nesting there that year, but in 1900 I could find no trace of them, nor have they been observed in Stowe Valley by Mrs. Straw, so they are probably irregular in their occurrence there.¹

81. *Hylocichla fuscescens*. WILSON'S THRUSH. — Common in the valley ; I heard them most often in the alders along the streams, but they also occupy the maple woods at the base of the mountain, in company with the Olive-backs and the Wood Thrushes.

82. *Hylocichla aliciae bicknelli*. BICKNELL'S THRUSH. — This is the commonest and most characteristic species at the summit of the mountain. It is really abundant in the extensive tracts of stunted firs and spruces surrounding the northern peak ('The Nose') and its range extends down into the upper edge of the tall timber — to about 3000 feet altitude — where it overlaps the range of the Olive-back.

During the seven trips that I made to the summit, I was constantly on the alert for a sight of the birds, and although I frequently heard them all about me, so shy were they that I saw them probably less than a

¹ That their occurrence in northern Vermont is not unusual is evidenced by a record from Willoughby Lake, by F. H. Allen (St. Johnsbury, 'Caledonian,' Sept. 11, 1896; quoted by Faxon and Hoffman in 'Birds of Berkshire Co., Mass.,' p. 10).

dozen times. The glimpses I had of them were either at long range, or cut short by the sudden departure of the bird into the dense cover of the evergreens, so that close study of their habits was impossible.

This was in marked contrast to the experience of Mr. Bradford Torrey, who visited the mountain in 1885. He says they were "never out of hearing and seldom long out of sight, even from the door step."¹ His visit, however, was at the time the young were leaving the nest, while I was there during the period of incubation, which may account for the difference in their familiarity. His surmise, based on the testimony of a friend, that the birds had left the mountain the following year would seem to be disproved by my experience. It is very improbable that a species so well established would entirely desert a favorable locality for no apparent cause; it seems more likely that his friend for some reason had overlooked them.

They sing at any time of day, though most frequently toward evening. The song is quite unlike any of the other thrush songs, resembling the Veery's somewhat in form, though not in quality of tone, which is like that of a fine, high-pitched reed. It is not so loud, or so clear as either the Olive-back's or the Veery's, and unlike the former, does not change its pitch perceptibly. The syllables *wel-â-weê-â-wel-chi-chi-wel*, whistled through the closed teeth, will give a faint conception of its character. The opening notes, *wee-a*, repeated two or three times, are smooth and flowing, and are followed by two staccato notes; the closing note resembles the opening ones, and is without special emphasis. The last three notes taken together form the characteristic portion of the song, and are frequently given by themselves without the prelude.

I am aware that the above description of the song differs in some respects from that given by Mr. Brewster, but it is not at all remarkable that the birds of another colony should sing a somewhat different song. The call note, which is frequently uttered, sometimes from a lofty perch, though usually in the thicket, is a rather harsh *cheep*. I did not hear the Veery note, *phew*, spoken of by Mr. Brewster.

83. *Hylocichla ustulata swainsonii*. OLIVE-BACKED THRUSH. — This is the commonest Thrush on the lower slopes of the mountain, ranging from the base to the upper limits of the heavy timber, above which it is replaced by *bicknelli*. Although quite shy, and therefore rarely seen, its beautiful rich song — in my opinion second only to that of the Hermit — was heard at frequent intervals during my trips up the mountain, sometimes as many as three of the singers being within hearing at once.

84. *Hylocichla aonalaschkæ pallasii*. HERMIT THRUSH. — During my first visit to the mountain in 1899, I listened in vain for the Hermits, and in 1900, I heard but one. They are certainly not numerous at the base of the mountain where I stayed, and I am quite sure there were none

¹ The Foot-Path Way, p. 95, 1896.

on the mountain or along the Notch road. Mr. Torrey writes me, however, that at the time of his visit in 1885, he heard the Hermit near the summit, "singing freely."

Mrs. Straw reports them as rather common at certain points lower down the valley.

85. *Merula migratoria*. AMERICAN ROBIN. — Abundant, especially in the valley. I was surprised to observe a good many in the heavy timber along the Notch road, far from clearings. I saw one also at the summit.

86. *Sialia sialis*. BLUEBIRD. — Rather uncommon; observed at the base of the mountain and at Moscow.

THE ALDER FLYCATCHER (*EMPIDONAX TRAILLII* *ALNORUM*) AS A SUMMER RESIDENT OF EASTERN MASSACHUSETTS.

BY J. A. FARLEY.

CERTAIN facts in the life-history of the Alder Flycatcher contribute to create the general impression that the bird is an exceedingly rare summer resident of eastern Massachusetts. Its chosen haunts are not too often in the eye of the world; it is not a vociferous species; and its manner of securing an existence keeps it for the most part out of view of the casual observer. Furthermore, the species being well known to arrive toward the end of the spring migration, an Alder Flycatcher, appearing late in May in the capacity of a returned summer resident, has doubtless been often mistaken for a migrant still northward bound. *E. t. alnorum* therefore, while always breeding sparingly, is not so rare a summer bird in the eastern part of Massachusetts as it is commonly supposed to be.

The Alder Flycatcher occurs in summer at various localities in Essex and Middlesex counties. I have noted it in the breeding season at Crane Neck Pond in Groveland, in northern Essex County, and so near Boston as Fresh Pond, Cambridge; also in the towns of Wilmington, Lynnfield, and Wakefield. In one locality in Essex County the bird is plainly increasing in numbers.

The Alder Flycatcher arrives in eastern Massachusetts about May 20. By the thirtieth of the month it has always reappeared on its breeding grounds. These are bushy meadows grown (or growing) up more or less thickly with alders. The lower growth in such places consists of wild roses (*Rosa*), sweet gale (*Myrica gale* L.), and other swamp shrubbery, together with the usual mixed meadow herbage. Mingled with the alders will be young swamp maples and birches and oftentimes scattering white cedars. The whole forms a thick, at times almost choked, expanse of meadow growth. The wild roses in which the Flycatcher is so fond of nesting seem to be almost as much an essential in its summer home as the alders themselves. The bird builds its nest year after year in the same favorite spot which may be of quite limited area. In a small meadow in the town of Lynnfield, where five years elapsed between the taking of two nests (June 16, 1895, and June 27, 1900), I recall that the second nest was placed in almost identically the same spot as the first. Two other nests (of other seasons) I also found in the same area, which was less than an acre in extent.

The erroneous idea¹ that the Alder Flycatcher is a very shy bird appears to obtain. This is due to the fact that its feeding-habits rather than any inherent shyness cause it to hug closely its favorite alders and other coverts. Besides keeping quite habitually within copse or thicket, with the general scope of its activity circumscribed by at least their outer fringes, it does not as a rule perch or fly high. The thick foliage of June and July aid materially in its concealment, so that it is not always easy to get even a momentary glimpse of the bird which may be calling and flying about within a few yards. The exceptions to the general rule that the Alder Flycatcher is *par excellence* a bird of copse and undergrowth are the little creature's infrequent short flights out into the open, and its brief visits to some favorite vantage-point above the line of foliage, for the deliverance of its harsh cry. But the emphatic preachment of the small protagonist of the alders is quite as apt to be heard while the performer is perched unseen

¹ This in spite of the fact that long ago the species was reported by Mr. Brewster to be "retiring but not shy." (Hist. N. A. Birds, 1874, p. 371.)

within his thicket and but a few feet from the ground. It should be further noted that the Alder Flycatcher is most in evidence during the days following its arrival from the South, and before the breeding season is well advanced. In May and June one may be now and then seen flying about freely from tree-top to tree-top in its home meadow. The Alder Flycatcher in eastern Massachusetts is no shyer than most other small birds. It is scarcely shyer than the Least Flycatcher, although a more restless bird than its orchard-loving cousin. The Alder Flycatcher does not hesitate to fly about from one bosky clump to another in its meadow. But when arrived at the concealing growth, it may remain a long time therein before venturing forth again.

The familiar cry, or song, of the Alder Flycatcher is usually described as having two or more syllables; and this indeed is the effect produced upon the ear of the listener at a distance of fifty yards, or even less, from the bird. But, as is the case with some other bird utterances, a wrong apprehension is gained of the peculiar note, unless it be heard close at hand. As ordinarily heard it may be written *rhi-bhee*, or even *rhi-bhea*, the second syllable being much emphasized. But when the bird calls within a few feet of the listener, this song is found in reality to consist of but one harsh explosive syllable. Of an indescribable *timbre*, it may be written *r-r-rhee* (or perhaps *r-r-rhea*, but with the final *a* in this case very slightly touched upon).

The minor notes of the Alder Flycatcher, like its harsh cry, are perfectly characteristic and unlike the notes of any other bird. They are of two sorts, the common low *pip* or *pep*, which to some ears may more resemble *peep*, and the softly whistled whisper (or whispered whistle), *pip-whee* or *pip-whing*. There is an interval between the two syllables of this soft song, and the last is accented. Its peculiar softness may be perhaps better expressed by *wheeo* rather than by *whee* or even *whing*. Although among the softest of bird utterances this song, when closely analyzed, will be found to be essentially a much subdued variant of the loud, harsh *r-r-rhee*, being similar in kind but exceedingly less in degree. Both the *pips* (*peps*) and the *pip-(pep)-whees* are sometimes uttered a half-dozen or more times in rapid succession. When quarreling with another bird, the Alder Flycatcher pro-

duces excited fighting notes which resemble the corresponding utterances of the Least Flycatcher. The *pips* are then louder than usual and somewhat approach in tone the *whits* of the Least.

In its summer home the Alder Flycatcher is one of the quietest of birds. After a long interval of silence, during which it has uttered not a sound of any sort, the bird may *pep* freely for a little while, interspersing the whistled *pep-whees* or the *whees* (*wheeos*) alone without the introductory *pep*. But the intervals are long between such spells of vociferousness.

The soft *pep-wheel* (*whing*) must be sharply listened for by the unaccustomed ear. It is a faint little cry that rarely rises above the gentle rustle of the alder and maple leaves as they are stirred by the June zephyrs.

With reference to its manner of nesting the Alder Flycatcher, in eastern Massachusetts at least, might well be given the additional name of Bush Flycatcher. So far as I have observed, it nests invariably in a bush, selecting most often a wild rose, or clump of rose shoots or sprays—usually *Rosa carolina* L.¹ The nest is often overshadowed by the alders which are scattered here and there in clumps in the bushy meadow. But it is as likely to be placed in unshaded shrubbery in the full glare of the sun. When in the open, it is more or less hid, however, by the mingled mass of wild roses, sweet gale, and other bushes rising breast-high all about it. It is often in the thickest jungle of such growth where tall, waving ferns vie in height with the predominating tangle of rose bushes that the Alder Flycatcher hides away its nest.

The height of the nest from the ground is from two to four feet. It is placed rather loosely, at times even flimsily, in an upright crotch or rather fork, or else between independent twigs that furnish a similar support. In either case the nest is suspended in a characteristic and peculiar way. I have never seen it set snugly down into a crotch after the manner of the Least Flycatcher. It is, instead, supported between twigs or prongs. It gets its chief support, as a rule, from two main shoots which

¹ I recall finding a nest once in a small shrub of meadow sweet (*Spiraea salicifolia* L.).

often grow from the ground independently of each other, but which will be sometimes members of one bush, forming in this case a long crotch or fork. When the slender shoots or sprays are distinct, springing separately from the ground, but growing close together at different inclinations, they furnish at best but an indifferent support to the nest. The general effect of the nest of the Alder Flycatcher thus placed is that of a somewhat loose, somewhat unfinished, not very securely fastened structure. The enlisting of separate, independent sprays in support of the nest is a marked feature of the Alder Flycatcher's nest architecture. One spray is usually superfluous, being only slightly tied to the nest and lending a support which is more apparent than real. But this feature seems to be an essential in the bird's architectural scheme and is almost always present.

The nest itself is in its body a fairly compact but not very neat structure. It is composed almost wholly of fine dried grasses with lining of the same material but of a finer (sometimes of the finest) sort. Some nests have in addition to the grasses fibrous strips of *Asclepias* woven around and through their structure. In one case I noticed on the outside of a nest some weather-worn material from a tent caterpillar's web. The outside of the nest always shows more or less loose odds and ends in the shape of long, narrow grasses and *Asclepias* strips 'stringing' down below or projecting in various directions. This unfinished appearance of the lower outside of the nest, although varying in degree in different examples, invariably characterizes the Alder Flycatcher's style of architecture. Together with the peculiar manner of support of the nest, it so strongly characterizes the structure that he who runs may read. The nest is unmistakable, even without eggs, and whether old or new. I have noted two types of nests — one, large, round, and thick-walled with diameter great in proportion to depth but still not a shallow structure; the other, smaller and shallower, inclining more to the sparrow-style, being of coarser construction within and without.

A beautiful nest which I found in 1895 in Essex County merits description because, in addition to being the handsomest structure of the Alder Flycatcher that I have seen, it is typical (although in a somewhat exaggerated way) of the general architecture of the

species. The nest was three and one-half feet from the ground in a clump of the swamp rose (*Rosa carolina* L.), being one foot below the top of the bush. The nest is large, representing the extreme in size. Its inside depth is two and one-eighth inches; outside depth, three inches; outside diameter, three and three-eighths inches; inside diameter, one-half inch less. It is composed of fine grasses and strips of *Asclepias*, the latter woven into the body of the structure as well as wound about the outside and over the rim. It is deeply-cupped and thickly-walled, with rim slightly curving over and in on one side. The lining is composed of the finest of hair-like, dried, yellow grasses. A pretty effect is obtained by the use of a very delicate grass which, projecting above the rim, shows the finest of tassels.

The nest is mainly supported by a single long fork in which it is suspended basket-like. An additional slight but practically fictitious support is lent by a third slender shoot springing independently from the ground, the nest being tied in the flimsiest manner possible to a very small sprig of the same. The long fork in which the nest hangs is formed by the main stem of the rose bush and a long slender upright branch springing therefrom at three feet from the ground. There is a space of two and one-half inches between the parting of this fork and the lowest outside point of the nest hanging therein above. A very fine twig from the long, slender branch runs directly up beneath the nest and helps to horse it up. The nest is strongly tied on one side to the main stem and two twigs springing therefrom. On the opposite side the long slender branch and one twig supply two additional points of support, there being in all, therefore, five main points of contact from which the structure hangs. A basket-like effect is obtained and this is enhanced by the profuse use of *Asclepias* on the outside of the nest, this being in fact the chief material used in its construction. This nest has in common with all others that I have seen the usual, characteristic, loose, unfinished, even ragged, appearance outside and below. But the long grasses and especially the fibrous strips of *Asclepias* hang or string down in the present case in unusual quantity and length. Much of this reaches down six inches below the nest. Some of it extends down for one foot. A studied air of disarrangement,

of negligence, of elegant confusion, is thus secured. The decorative effect is heightened by the silvery *Asclepias*, which, in addition to entering so largely into the body of the nest, causing it to shine flax-like, streams down and out therefrom in what might be termed a fibrous cascade. In greatest possible contrast to the disarranged, silvery-gray exterior is the round, deeply-hollowed interior with its exquisite yellow lining of finest grass. The excessive use of *Asclepias* in this nest is exceptional. In another respect the nest is scarcely typical, as it is more firmly held in its bush than the average structure of the Alder Flycatcher.

The looser style of suspension is well shown by another nest in my collection. This is characteristically held up by two tall, slender, entirely distinct rose shoots which grew in a thick jungle of wild roses and sweet gale. Each of the shoots is divided, the larger into two twigs and these in their turn into two smaller twigs which join in partially supporting the nest. The other main, separate shoot supports one side of the structure only with a long, frail, slender spray, which, as usual, subdivides at the nest into several small twigs, the whole taken together giving but a slight support to the grass basket suspended between them. I watched these tall, slender, swamp rose sprouts as they blew over in their clump, bending under the gusts of a high June south-west wind as it swept across a broad meadow. The nest-sprays bent over at an angle of at least forty-five degrees, but were stiffened by the general mass of surrounding growth, so that the nest hung safely in its flimsy fastening and the eggs remained within their shallow cup.

The eggs of the Alder Flycatcher are usually of a creamy white (less often of a dead white), with markings of different shades of brown, these being chiefly at the large end and often forming a broken ring. The markings are generally of a pale, reddish brown, approaching flesh-color if paler than usual, and verging on yellowish if running to the darker extreme. The markings are in spots (often very fine) and small blotches. A few minute dots of a very dark brown, almost black in fact, which have no apparent relation to the general color-scheme, also appear. The eggs are often beautiful objects, especially when the brown of the

markings approaches yellowish and lilac. With this shade appears a ground of creamy pink. Sets of eggs collected in the same locality show considerable variation, and the eggs of a set often differ much among themselves. A peculiar set of three in my collection, taken July 3, 1900, represents the minimum in measurements, and may be described as follows: No. 1 is of a dull dead white and is nearly immaculate, having only a very few scattered, minute, dark brown dots at the larger end; No. 2 has at the larger end, in addition to the very fine dusting of dark dots, a single abnormally large blotch of pale brown, with overlaying fine tracery and dots of a very dark brown; No. 3 is of a creamy ground color and is beautifully marked after the typical style with a fairly complete ring of pale brown blotches having darker centres, and with dark brown (almost black) round dots interspersed among the blotches, a rich effect being thus secured. The eggs of this set average $.67 \times .52$. But the average size of eggs of *alnorum* appears to be about $.71 \times .55$.

The Alder Flycatcher lays sets of three or four eggs, four being the commoner number. It completes its nest and begins laying about the middle of June. But sometimes it will not begin laying until a week later. I have taken very slightly incubated eggs on June 18, and fresh eggs as late as July 3. But this latter date is exceptional. By the middle of July or earlier the young flycatchers are out of the nest.

In the matter of its behaviour at the nest the Alder Flycatcher, in contrast to its general habits, may be fairly considered shy. It is not a close sitter. I have tried repeatedly to catch the female on her eggs but never but once succeeded in so doing. In this exceptional case the bird undoubtedly trusted to the effective concealment of the nest by the very thick clump of wild roses in which it was placed. I stood for several seconds beside this unseen nest before the bird flew. After being flushed the female flycatcher is chary about showing herself in the neighborhood of the nest. So, too, the male. The low *pep* of protest somewhere near will be often the only evidence of the Flycatchers' connection with their nest.

Considerable patience has frequently to be exercised if one hides and awaits the return of the female. She may return within five

or ten minutes or delay for a half-hour. When finally appearing, whether soon or late, she does not indulge in any preliminary hopping or perching in near-by bushes or in the nest-bush itself, but flies straight to the nest and goes on in a twinkling. She often flies through the shrubbery unseen, appearing suddenly and unexpectedly at the nest, and going on the eggs like a flash. But she will frequently leave the eggs again after remaining on but a minute or two, returning after a brief interval for another short stay, and so continuing restless and nervous as long as the intruder remains in the neighborhood.

ON A COLLECTION OF BIRDS MADE BY W. W.
BROWN, JR., AT DAVID AND DIVALA, CHIRIQUI.

BY OUTRAM BANGS.

MR. W. W. BROWN, JR., has lately sent to my brother and me 1183 bird skins, the result of about 58 days collecting during the whole of the month of November and parts of October and December, 1900, at David and Divala, two towns, about thirty miles apart, situated in the heavily forested lowlands of Chiriqui. The birds were all taken in the cool tropical forest or on the plantations at about 200 feet above sea level. This splendid collection contains six forms that appear to be new, and some of the other birds belong to species exceedingly rare or altogether wanting in American Museums, so that it seems worth while to publish the following complete list of the lot.

Though he was entirely without assistance, Mr. Brown sent home, beside this large collection of birds, many mammals, and the result shows with what energy he worked in the unhealthy, tropical climate of this fever-stricken region. At David and Divala, Mr. Brown tells me, there is a great difference between the temperatures in the daytime and at night. The days are excessively hot and the nights cool. In the deep forest, however, under the shade of the red rubber tree and the gigantic Spanish

cedar, where the atmosphere is laden with moisture, the air is always cool and damp.

To the student of American birds the ornithology of Chiriqui is of exceptional interest, containing many forms peculiarly its own, and different from the representative form from either north of it—in Central America proper—or south of it, in Panama. Some years ago Arcé made extensive collections of birds in Chiriqui and from the results of his work many of the peculiar forms of the region were made known by Messrs. Salvin and Godman and others; but still more remain to be described. Most of Arcé's material, which is of very poor quality, went to England and American collections are badly off for birds from the Chiriqui region. The following list fills many a gap in the joint series of American birds that the various collections of this country could produce if all were brought together.

I am under the greatest obligation to the authorities of the United States National Museum for allowing me unrestricted use of the collection of birds there, while I was in Washington identifying many of the species in the present collection, and to both Dr. Robert Ridgway and Dr. C. W. Richmond for their unfailing kindness and wise counsel.

Tinamus castaneiceps Salvadori.—Seven specimens, both sexes, taken at Divala, in November and December. The type locality of this species is Volcan de Chiriqui.

Crypturus soui modestus (Cab.).—Three specimens, both sexes, Divala, November and December. These are extreme examples of this race, with dark grayish throat and a conspicuous dark band across the breast.

Penelope cristata (Linn.).—One adult ♂, Divala, December 8.

Ortalis cinereiceps (Gray).—One adult ♂, Divala, December 14.

Odontophorus castigatus,¹ sp. nov.

Seven specimens, both sexes, one young, Divala, November and December.

Type.—Divala, Chiriqui, adult ♂, No. 7642, Coll. of E. A. and O. Bangs. Collected Dec. 8, 1900, by W. W. Brown, Jr.

Characters.—Nearest to *O. marmoratus* Gould; colors deeper, more olivaceous, less grayish, throughout; crest and top of head dark brown instead of light chestnut; throat and upper breast much darker, less grayish; hind neck and upper back dark olivaceous brown instead of grayish.

¹*Castigatus*, shut in, confined within small limits.

Color.—Adults, sexes alike; narrow frontal band, narrow band below eye and chin chestnut; top of head dark sepia, gradually becoming blackish on the long feathers of the crest; hind neck and upper back dark olive-brown slightly vermiculated with a paler, grayer shade of the same color; lower back and rump bistre, gradually darkening on upper tail-coverts to olive, somewhat irregularly marked throughout with small dusky and tawny-olive spots; scapulars and tertials much varied, grayish near shafts, and blotched and marked with blackish, olive, and rich reddish olive, the longer feathers with conspicuous tawny-olive tips; primaries dark hair-brown, notched and marked on outer webs with buff; secondaries hair-brown marked and barred on outer web with dull yellowish brown; all the smaller wing-coverts are hair-brown, marked on both webs with dull yellowish brown and with small whitish terminal and dusky subterminal spots; whole inside of wing hair-brown; throat olive slightly speckled with whitish toward chin; breast bistre, the feathers slightly barred with dusky and yellowish; belly, flanks, and sides paler than breast and with a grayish cast in middle of belly, the feathers more varied with dusky and yellowish markings; under tail-coverts olive slightly marked and spotted with dull yellowish and dusky; tail dark olive, thickly vermiculated and speckled with dull yellowish brown; “bill and feet black; bare skin round eye bright red.”¹

Young similar to adults, except top of head and crest rather more rusty and bill reddish instead of black.

Measurements (in millimeters).

| No. | | Sex. | Wing. | Tail. | Tarsus. | Exposed culmen. |
|------|----------|-------|-------|-------|---------|-----------------|
| 7642 | Type | ♂ ad. | 148. | 71 | 42. | 18. |
| 7643 | Topotype | ♂ ad. | 145. | 70. | 40. | 18. |
| 7644 | “ | ♀ ad. | 141. | 67. | 41. | 18. |
| 7645 | “ | ♀ ad. | 145. | 66. | 41. | 17.5 |

Remarks.—In the national Museum Collection are examples of *O. marmoratus* from the Bogota region (the type locality of the species) and from Panama, which do not appear to differ in any way, but all Chiriqui examples (the present series, and one specimen in National Museum collected by Arcé) are very much darker in color and otherwise different, and represent quite a distinct form. There are many other cases among the birds of this region of a species ranging from Bogota to Panama without change, but in Chiriqui being replaced by a different, representative form.

¹ Note made by Mr. Brown from the fresh specimens.

Columba rufina Temm. & Knip. — One adult ♀, Divala, December 16.
Columba nigrirostris Scl. — Two males, Divala, November 4 and December 12.

Zenaidura macroura (Linn.). — Three females, Divala, November.

Columbigallina rufipennis (Bp.). — Two specimens, ♂ and ♀, Divala, December.

Claravis pretiosa (Ferrari-Perez). — One adult ♂, Divala, December 15.

Leptotila verreauxi Bp. — Three specimens, both sexes, Divala, November and December.

Leptotila rufinucha Scl. & Salv. — Two specimens, ♂ and ♀, Divala, December.

Geotrygon montana (Linn.). — One ♂, Divala, November 26.

Aramides cayanae chiricote (Hartl.). — Two specimens, ♂ and ♀, Divala, November.

Oxyechus vociferus (Linn.). — Three specimens, both sexes, Divala, November and December.

Bartramia longicauda (Bechst.). — One ♀, Divala, November 30.

Asarcia variabilis (Linn.). — Two adult males, Divala, December.

Dendrocygna discolor Scl. & Salv. — Two specimens, ♂ and ♀, Divala, December. Neither of these is quite in fully adult plumage, but both belong to the South American species, which thus extends to Chiriqui.

Spatula clypeata (Linn.). — One ♀, David, October 16.

Ibycter americanus (Bodd.). — One adult ♀, Divala, December 8.

Micrastur zonothorax (Cab.). — One adult ♀, Divala, December 12. Dr. Ridgway is of opinion that this specimen is best referred here. It, however, may not be typical of the South American species. Unfortunately the bird is so very rare that there is not a specimen in the National Museum, and I believe not one in this country.

Geranospizias niger (Du Bus). — One adult ♂, Divala, November 24.

Rupornis ruficauda (Scl. & Salv.). — Two adult females, Divala, November.

Cerchneis sparveria (Linn.). — Three males, Divala, November.

Megascops brasiliensis (Gmel.). — One adult ♂, Divala, December 11.

Megascops vermiculatus Ridgw. — One adult ♂, Divala, December 8.

M. brasiliensis has a very extensive range, throughout which it does not vary, and in many places, as here, another species of much more local distribution occurs with it.

Lophostrix stricklandi (Scl. & Salv.). — One adult ♀, Divala, December 11.

Ciccaba nigrolineata (Scl.). — Two adult females, Divala, December.

Speotyto cunicularia hypogæa (Bp.). — One adult ♀, Divala, December 13.

Ara macao (Linn.). — One adult ♂, Divala, December 1.

Conurus finschi Salv. — Two specimens, ♂ and ♀, Divala, December.

The type locality of the species is Bugaba, Chiriqui. These two examples are probably young. They agree in every way with the description of the adult except in having green instead of red foreheads.

Conurus ocularis *Scl. & Salv.*—Twelve specimens, both sexes, Divala and David, October, November and December.

Brotogerys jugularis (*Müll.*).—Thirty-four specimens, both sexes, Divala and David, October, November and December.

Amazona virenticeps *Salvadori.*—Two specimens, ♂ and ♀, Divala, December 16.

Amazona panamensis *Cab.*—One adult ♂, Divala, December 3.

Amazona salvini *Salvadori.*—Five specimens, both sexes, Divala, November and December.

Pionus menstruus rubrigularis (*Cab.*).—Eight specimens, both sexes, Divala and David, October and December.

Pionopsittacus hæmatotis *Scl. & Salv.*—Eight specimens, both sexes, November and December.

Ceryle torquata (*Linn.*).—Three specimens, both sexes, Divala, November and December.

Ceryle amazona (*Lath.*).—Two males, Divala, December.

Ceryle americana septentrionalis *Sharpe.*—Seven specimens, both sexes, Divala, October, November and December.

Ceryle superciliosa stictoptera *Ridg.*—One (♀?), Divala, December 15. This bird is typical *stictoptera*, those collected by Mr. Brown in Panama do not approach it in the least, but are true *superciliosa*.

Momotus lessoni *Less.*—Twenty-seven specimens, both sexes, Divala and David, October and November.

Nyctidromus albigollis (*Gmel.*).—Four specimens, both sexes, Divala, November and December.

Antrostomus carolinensis (*Gmel.*).—Two females, Divala, November and December.

Phaethornis longirostris (*Less. & Delattre.*).—Two males, Divala, November and December. These are much darker below than is usual in true *P. longirostris* of Guatemala or in examples from Panama, which seem to be about the same as Guatemalan specimens. They probably represent a local race worth recognizing by name, but I prefer to wait for more specimens before deciding this point.

Florisuga mellivora (*Linn.*).—One ♀, Divala, December 6.

Agyrtria decora (*Salv.*).—Seven specimens, both sexes, Divala, November.

This very local species is exceedingly rare in collections. All the specimens taken were in autumnal or young plumage, the males having some blue feathers in the throat, but the throat patch not well defined.

Amizilis fuscicaudata (*Fraser.*).—Two males, Divala, November.

Hylocharis elicæ (*Bourc. & Muls.*).—Three males, Divala, November and December.

Chlorostilbon assimilis *Lavr.*—Two males, young and adult, Divala, November 12.

Thalurania columbica venusta (Gould).—One adult ♂, Divala, December 13.

The type locality of the subspecies is Volcan de Chiriqui, and the form extends from Chiriqui to Costa Rica. I have examined many specimens from the latter country, and an enormous series of true *T. columbica* from various places in Colombia. *T. columbica venusta* is a perfectly valid form; the adult ♂ can always be told from the adult ♂ of true *T. columbica* by its wholly purple interscapulum, and wholly black back of head.

Floricola superba pallidiceps (Gould).—One adult ♂, Divala, November 10.

Trogon massena Gould.—Nine specimens, both sexes, Divala, November and December.

Trogon bairdi Lawr.—Twelve specimens, both sexes, Divala, November and December.

Trogon atricollis tenellus (Cab.).—Nine specimens, both sexes, Divala, November and December.

Trogon caligatus Gould.—One ♂, Divala, December 5.

Piaya cayana thermophila (Scl.).—Three specimens, both sexes, Divala, October and November.

Diplopterus nœvius (Linn.).—Three males, Divala, November and December.

Crotophaga ani Linn.—Five specimens, both sexes, Divala, December.

Rhamphastos tocard Vieill.—Two specimens, ♂ and ♀, Divala and David, October and November.

Peteroglossus frantzii Cab.—Five specimens, both sexes, Divala and David, October and November.

Galbula melanogenia Scl.—Thirty-four specimens, both sexes, Divala and David, October, November and December.

Bucco dysoni Scl.—One adult ♂, Divala, November 19.

Malacoptila panamensis Lafr.—Twenty specimens, both sexes, Divala, November and December.

Melanerpes chrysauchen Salv.—Three males, Divala, November. The type locality of the species is Bugaba, Chiriqui.

Melanerpes wagleri Salv. & Godm.—Eleven specimens, both sexes, Divala and David, October, November and December.

Veniliornis ceciliæ (Malh.).—One ♀, Divala, November 9.

Campophilus guatemalensis buxans,¹ subsp. nov.

Two adults, ♂ and ♀. Divala, November.

Type.—Divala, Chiriqui, adult ♂, No. 7803, Coll. of E. A. & O. Bangs. Collected Nov. 26, 1900, by W. W. Brown, Jr.

Characters.—A southern form of *C. guatemalensis*, distinguished by smaller size; deeper yellow under side of wing; much more yellowish,

¹ *Buxans*, of the color of boxwood.

less whitish underparts; the black bands on underparts all narrower and less well marked; the black of under side of neck more restricted — not reaching so far over breast; and the light colored stripes on sides of neck yellower — less purely white — and more restricted.

Color. — Adult ♂, head all round crimson, a small brownish patch just over opening of ear; upper parts dull brownish black; two narrow yellowish white stripes, extending from the red of head down sides of neck to end of interscapulum; jugulum black; lower breast and rest of under parts buff-yellow, crossed by numerous black bands, which become less well marked on middle of belly; lining of wing and whole under surface of wing feathers, except the ends which are blackish, strong yellow (a shade about between maize yellow and buff yellow); bend of wing slightly touched with red; under side of tail and outer edges of primaries olive.

Adult ♀, similar to male, but throat black, and a large black patch on top of head, which usually includes much of the crest; no red on bend of wing.

Measurements (in millimeters).

| No. | | Sex. | Wing. | Tail. | Tarsus. | Exposed culmen. |
|------|----------|-------|-------|-------|---------|-----------------|
| 7803 | Type | ♂ ad. | 187. | 113. | 35. | 48.5 |
| 7804 | Topotype | ♀ ad. | 187. | 114. | 35.5 | 47.5 |

Remarks. — The Guatemalan Ivory-bill as it ranges southward gradually becomes smaller, with lighter bill, and darker, more yellowish, less whitish, underparts and under side of wing. The two examples in the present collection are from farther south than any other specimens I have seen and represent the form *C. guatemalensis buxans* in its extreme. The northern extreme — true *C. guatemalensis* — occurs in southern Mexico, Guatemala, etc., and to this form all of the various names that have been given to the species seem to apply. As has been said before, it is a larger bird with more black on under side of neck and breast, heavier black bands crossing lower breast, belly etc., and whitish or yellowish white under side of wings and ground color of under parts.

Picumnus granadensis Lafr. — One adult ♂, Divala, November 16.

Colopterus pilaris Cab. — One adult ♀, David, October 15.

Todirostrum cinereum (Linn.). — Three specimens, both sexes, Divala and David, October and November.

Platyrhynchus superciliaris Lawr. — One adult ♀, Divala, November 20. The type locality of this species is Panama.

Mionectes assimilis dyscolus,¹ subsp. nov.

Six specimens, both sexes, Divala, October, November and December.

Type.—Divala, Chiriqui, adult ♀, No. 7958, Coll. of E. A. & O. Bangs. Collected Dec. 6, 1900, by W. W. Brown, Jr.

Characters.—Slightly smaller than true *M. assimilis*; bill smaller; throat less gray; color of underparts more greenish, less buff.

Colors.—Sexes alike; whole upper parts, including edges of wing feathers and upper surface of tail, olive-green; no wing bars (at least in the adult plumage); tertials tipped with pale oil green; chin greenish gray gradually becoming dull olive-green on breast; middle of belly and under tail-coverts buffy olive-yellow; sides and flanks darker, more shaded with olive-green; bend of wing olive-yellow; lining of wing buff-yellow; wing feathers, except the outer margins, dusky; bill (in dried specimens) blackish, basal part of lower mandible paler-horn color.

Measurements (in millimeters).

| No. | | Sex. | Wing. | Tail. | Tarsus. | Exposed culmen. |
|------|----------|-------|-------|-------|---------|-----------------|
| 7958 | Type | ♀ ad. | 61. | 48. | 15.2 | 13.8 |
| 7957 | Topotype | ♀ ad. | 59. | 45. | 15. | 13.2 |
| 7959 | " | ♂ ad. | 61.5 | 48.5 | 15.4 | 13.2 |
| 7960 | " | ♂ ad. | 59. | 44. | 15. | 13.4 |
| 7961 | " | ♂ ad. | 62. | 49. | 15. | — |

Remarks.—I have already expressed my belief that *Mionectes oleagineus* and *M. assimilis* are distinct species. The more specimens I examine the more convinced am I that this is so. True *M. oleagineus* of northern South America is a very different bird from true *M. assimilis* of southern Mexico and Guatemala, and the two forms that come from regions nearest together—*M. oleagineus parvus* of Panama, and *M. assimilis dyscolus* of Chiriqui—show no sign of intergrading, but are quite as distinct as are the two typical forms.

Ornithion pusillum (Cab. & Heine).—One ♂, Divala, November 7.

Tyranniscus parvus Lawr.—Two specimens, ♂ and ♀, Divala, November.

Tyrannulus reguloides Ridgw.—One adult ♀, Divala, November 20. This specimen agrees exactly with the type of *T. reguloides*, from the lower Amazon and is very different from *T. elatus* of Guiana and Colombia. It is rather strange that the Chiriqui bird should prove to belong

¹ *Dyscolus*, of a bad temper, peevish.

here, and this fact would seem to indicate that *T. reguloides* is a coastal form extending from the lower Amazon to Chiriqui, being replaced farther inland along its range by *T. elatus*. The specimen measures: wing, 47; tail, 39; tarsus, 12; culmen, 6.4 mm.

Elænia pagana subpagana *Scl. & Salv.*—Ten specimens, both sexes, Divala and David, October and November.

Sublegatus arenarum (*Salv.*).—One ♂, David, October 19.

Myiozetetes similis superciliosus (*Bp.*).—Nineteen specimens, both sexes, Divala and David, October, November and December.

Myiozetetes granadensis *Lawr.*—One ♀, Divala, December 15.

Rhynchocyclus æquinoctialis (*Scl.*).—One ♀, Divala, December 8.

Myiodynastes audax nobilis *Scl.*—Two specimens, ♂ and ♀, Divala, December.

Megarhynchus pitangua (*Linn.*).—Two males, Divala, October and November.

Myiobius sulphureipygius (*Scl.*).—Three specimens, both sexes, Divala, November and December.

Myiobius erythrurus (*Cab.*).—Three specimens, both sexes, Divala, November and December.

Empidonax flaviventris *Baird.*—One male, Divala, November 30.

Empidonax trailli (*Aud.*).—Three males, Divala, October and November.

Empidonax minimus *Baird.*—One ♂, David, October 16.

Horizopus richardsonii (*Swains.*).—Two specimens, ♂ and ♀, Divala, November 4, David, October 16.

Myiarchus panamensis *Lawr.*—Nine specimens, both sexes, Divala and David, October and November.

Myiarchus crinitus (*Linn.*).—Six specimens, both sexes, Divala, November and December. These, like all other birds taken in winter in Central America that I have seen, belong to the small billed northern form, I called *boreus*. The large billed, smaller race, true *M. crinitus*, of Florida, Georgia, etc., probably does not go so far south to spend the winter.

Tyrannus melancholicus satrapa (*Licht.*).—Fourteen specimens, both sexes, Divala and David, October, November and December.

Milvulus tyrannus (*Linn.*).—Seven specimens, both sexes, Divala and David, October and December.

Milvulus forficatus (*Gmel.*).—Five specimens, both sexes, Divala, November and December.

Pipra mentalis ignifera,¹ subsp. nov.

Fifteen specimens, both sexes, Divala, November and December.

Type.—Divala, Chiriqui, adult ♂, No. 7823, Coll. of E. A. and O. Bangs. Collected Nov. 30, 1900, by W. W. Brown, Jr.

¹ *Ignifer*, firebearing.

Characters.—A southern form of *P. mentalis*, distinguished by the red of the head being much more intense, less mixed with orange; by having deeper yellow thighs and under wing-coverts; and by the black of the body being rather more intense.

Color.—Adult ♂: Intense black; whole top and sides of head vivid scarlet-vermilion, the bases of the feathers orange; chin and thighs deep gamboge-yellow, in one or two specimens (very old ones?) shot with orange-vermilion; under wing-coverts pale lemon yellow; inner margins of secondaries and tertials yellowish white. Adult ♀: Above dull oil-green; throat, belly and under wing-coverts olive yellow; breast oil-green; thighs wax yellow; primaries and secondaries and rectrices dusky, margined with green; inner margins of secondaries and tertials buffy white.

Measurements (in millimeters).

| No. | | Sex. | Wing. | Tail. | Tarsus. | Exposed culmen. |
|------|----------|-------|-------|-------|---------|-----------------|
| 7823 | Type | ♂ ad. | 59. | 25.5 | 15. | 10. |
| 7819 | Topotype | ♂ ad. | 59.5 | 26. | 15. | 10. |
| 7822 | " | ♂ ad. | 58.5 | 26. | 15. | 10. |
| 7824 | " | ♂ ad. | 59. | 27. | 15.4 | 9.8 |
| 7825 | " | ♂ ad. | 59.5 | 25.5 | 15.2 | 10. |
| 7827 | " | ♀ ad. | 60. | 25.5 | 15. | 10. |
| 7828 | " | ♀ ad. | 58.5 | 24.5 | 14.8 | 9.8 |
| 7829 | " | ♀ ad. | 59.5 | 26. | 14.8 | 10. |

Remarks.—The type locality of true *Pipra mentalis* Scl. is Oaxaca, Mexico. I have examined a large series of this form, from many points in southern Mexico and northern Central America, and find very little variation among them. I have also seen a large number of specimens of the southern form, here named *P. mentalis ignifera*, from many places in southern Central America, and Chiriqui; they also differ very little among themselves. The line between the two forms seems very sharply drawn, though the characters that separate them are slight, consisting chiefly in the different shades of color of the head, thighs and under wing-coverts of the male. These differences, however, are perfectly constant, and are easily seen on comparison.

Pipra velutina Berl. — Eighteen specimens, both sexes, Divala, October, November and December.

Pipra leucorrhoea Scl. — Three males, Divala, November and December. "Iris brown."¹

¹ Note made by Mr. Brown from fresh specimens.

Chiroxiphia lanceolata (Wagl.). — Two males, Divala, December 17, and David, October 16.

Manacus aurantiaca (Salv.). — Twenty-five specimens, both sexes, Divala, October, November and December. The type locality of the species is Bugaba, Chiriqui.

*Scotothorus*¹ *veræpaci* (Scl.). — Two specimens, ♂ and ♀, Divala, December.

Pachyrhamphus cinereiventris Scl. — Three specimens, both sexes, Divala, October, November, and December.

Lathria unirufa (Scl.). — One ♀, Divala, October 27.

Lipaugus holerythrus Scl. & Salv. — Five specimens, both sexes, Divala, November and December.

Attila sclateri Lawr. — Two specimens, ♂ and ♀, Divala, December 11.

Chasmorhynchus tricarunculatus J. & E. Verr. — Thirty-four specimens, adults of both sexes, and young males in every stage of plumage, from a dress closely resembling that of the adult ♀ to that which differs only from the adult ♂ in having a few green feathers irregularly mixed in the brown and white of body and head, Divala, October and December.

Myrmotherula menetriesii (d' Orb.). — Four males, Divala, November and December.

Dryophila boucardi Scl. — Seven specimens, both sexes, Divala, November and December.

Cercomacra crepera,² sp. nov.

Four specimens, both sexes, Divala, November.

Type. — Divala, Chiriqui, adult ♂, No. 7913, Coll. of E. A. & O. Bangs. Collected Nov. 24, 1900, by W. W. Brown, Jr.

Characters. — Similar to *C. tyrannina* except in being very much darker in color throughout.

Color. — Adult ♂, upper parts slate black, a large concealed white dorsal patch; under parts slate gray darkest on breast and becoming dull olive on flanks, lower belly and under tail-coverts; lesser and middle wing-coverts tipped with white, the greater coverts slightly so; rectrices barely tipped with whitish; lining of wing mostly white. Adult ♀, similar to ♀ of *C. tyrannina*, but darker throughout, the ochraceous of under parts several shades darker, the brownish olive of back darker and more dusky, and the wings and tail darker reddish brown.

¹ *Scotothorus* (cf. Oberholser, Proc. Acad. Nat. Sci. Phila. 1899, pp. 208-209), *Heteropelma* Bp. being preoccupied.

² *Creper*, dusky, dark.

Measurements (in millimeters).

| No. | | Sex. | Wing. | Tail. | Tarsus. | Exposed culmen. |
|------|----------|-------|-------|-------|---------|-----------------|
| 7913 | Type | ♂ ad. | 60. | 55. | 22.4 | 16.4 |
| 7916 | Topotype | ♂ yg. | 62. | 60. | 24. | 17. |
| 7915 | " | ♀ ad. | 61. | 61. | 24. | 16.4 |
| 7914 | " | ♀ ad. | 61. | 54. | 23. | 16.6 |

Remarks. The type locality of *Cercomacra tyrannina* is Bogota; from this region north to Panama the form extends without change. Specimens collected by Mr. Brown at Loma del Leon, precisely matched skins from the type locality. In Nicaragua and Chiriqui the present form replaces *C. tyrannina*, and the two may prove only subspecifically distinct, but the differences in color are so marked that it seems best, for the present at least, to regard them as distinct species.

I am a little astonished that this bird, which is not rare in Nicaragua and Chiriqui, and is often found in collections from these countries, should not have been named before, it is so noticeably different in color from *C. tyrannina*.

Gymnocichla nudiceps (Cassin).—Seven males, Divala, October, November and December.

Formicarius umbrosus Ridgw.—One ♀, not fully adult, Divala, December 11.

Thamnophilus transandeanus Scl.—Thirteen specimens, both sexes, Divala, October, November and December.

Thamnophilus doliatus (Linn.).—Thirteen specimens, both sexes, Divala and David, October, November and December. The races of this species are rather difficult to understand. Birds from Chiriqui and northward have the general appearance of true *T. doliatus* of Guiana, but from the region lying between the ranges of these two comes the quite different black-crested *T. doliatus nigricristatus*. The northern bird has been called *T. doliatus affinis* (Cab. & Heine), but Bonaparte's name *T. rutilus*, based on a female from Guatemala, appears to be the proper name of the race, should it prove distinct. I do not use it here because, so far, in spite of its curious distribution, I have been unable to find any satisfactory way of distinguishing it even as a subspecies.

Thamnophilus punctatus Cab.—Fourteen specimens, both sexes, Divala and David, October, November and December. The females are, of course, the so-called *T. bridgesi*. Mr. Cherrie, was, I believe the first to discover that *T. punctatus* and *T. bridgesi* are but the male and female of one and the same species.

Gymnophithys bicolor olivaceus Ridgw.—Two specimens, ♂ and ♀, Divala, November and December.

Myrmelastes intermedius (Cherrie).—Three specimens, both sexes, Divala, November.

Grallaria perspicillata Lawr.—Four specimens, both sexes, Divala, October, November and December.

Dendrocolaptes sanctithomæ (Lafr.).—Two specimens, ♂ and ♀, Divala, November.

Dendroornis lacrymosa Lawr.—Two males, Divala, November and December.

Dendroornis nana Lawr.—Seven males, Divala, October, November and December.

Picolaptes lineaticeps ScL.—Six specimens, both sexes, Divala and David, October, November and December.

Dechonychura typica Cherrie.—Two specimens, ♂ adult and ♀ young, Divala, December. Mr. Brown was fortunate in securing two examples of this very rare bird, known before only by the type specimen and one specimen from Panama—both in the National Museum.

Dendrocincla anabatina ScL.—Three males, Divala, November and December.

Automolus exsertus,¹ sp. nov.

Six specimens, both sexes, Divala, November and December.

Type.—Divala, Chiriqui, adult ♀, No. 7868, Coll. of E. A. & O. Bangs. Collected Nov. 29, 1900, by W. W. Brown, Jr.

Characters.—Related to *A. cervinigularis* and *A. pallidigularis*. Size about as in the former (larger than *A. pallidigularis*). Colors different from those of either; breast not mottled; the underparts, breast, belly, and sides are browner and more olivaceous; the back much more olivaceous, less rufous; the throat is about the same color as in *A. cervinigularis*.

Color.—Superciliary stripe and orbital ring tawny ochraceous; back rich raw umber, head slightly darker, the feathers scaly in appearance; upper tail-coverts and tail ferruginous-chestnut; wings burnt umber; throat buff; breast not mottled, about tawny olive, shading to raw umber on sides and flanks and to ferruginous on under tail-coverts.

Measurements (in millimeters).

| No. | | Sex. | Wing. | Tail. | Tarsus. | Exposed culmen. |
|------|----------|-------|-------|-------|---------|-----------------|
| 7868 | Type | ♀ ad. | 90. | 73. | 24. | 24. |
| 7869 | Topotype | ♀ ad. | 89. | 72. | 25. | 23.6 |
| 7872 | " | ♀ ad. | 91.5 | 76. | 24.4 | 23. |
| 7870 | " | ♂ ad. | 91. | 76.5 | 24.2 | 23. |

¹ *Exsertus*, evident, conspicuous.

Remarks.—*Automolus exsertus* must not be confused with a form described by Messrs. Salvin & Godman from the same general region, but from higher altitudes in the Cordillera de Chiriqui. This bird, *A. fumosus*, belongs to the *rubiginosus* group, which is distinguished by lacking a superciliary stripe; *A. exsertus* belongs with *A. cervinigularis* and *A. pallidigularis*, with a conspicuous superciliary stripe, but is a very well marked form, differing in lacking the mottling of the breast and being of a more olivaceous color throughout. In size it is nearest to *A. cervinigularis* and in color rather nearer to *A. pallidigularis*, though different in this respect from either.

Xenops genibarbis Ill.—Four specimens, both sexes, Divala, November.

Stelgidopteryx ruficollis uropygialis (Lawr.). Five males, Divala, November and December. These specimens differ a good deal individually, — two are true *S. uropygialis*, exactly like Panama birds, the other three approach *S. ruficollis fulvipennis* of southern Mexico and Guatemala, in varying degrees.

Tachycineta albilinea (Lawr.). — One adult ♀, David, October 16.

Vireo flavifrons Vieill. — One ♀, Divala, November 7.

Hylophilus flavipes viridiflavus (Lawr.). — Two males, one from Divala, November 5, the other from David, October 17.

Cyanocorax affinis zeledoni Ridgw. — Four specimens, both sexes, Divala, November and December.

Troglodytes inquietus Baird. — Four males, Divala, November. One in nestling plumage was taken November 17.

Thryothorus fasciiventris melanogaster (Sharpe). — Nine specimens, both sexes, one in nestling plumage, Divala, November and December. The type locality of the form is Bugaba, Chiriqui; it seems to be fairly well differentiated from the Panama form, *T. f. albigularis* (Scl.).

Thryophilus rufalbus castanonotus (Ridg.). — Two males, Divala, December 2, and David, October 22.

Thryophilus modestus (Cab.). — Three specimens, both sexes, Divala, October and November.

Rhodinocichla rosea (Less.). — Sixteen specimens, adults of both sexes, and two young, Divala, November and December.

Merula leucauchen (Scl.). — Two specimens, ♂ and ♀, Divala, December.

Merula grayii casius (Bp.). — Seven specimens, both sexes, Divala and David, October, November and December.

Polioptila bilineata Bp. — One ♀, Divala, November 5.

Anthus rufus parvus (Lawr.). — Two males, Divala, December 3.

Basileuterus leucopygius veraguensis Sharpe. — One adult ♂, Divala, November 18.

Geothlypis formosa (Wils.). — One ♂, Divala, December 7.

Seiurus aurocapillus (Linn.). — Two specimens ♂ and ♀, Divala, December.

Dendroica æstiva (Gmel.). — Nine specimens, both sexes, Divala, October 28–November 26, David, October 17.

Dendroica pensylvanica (Linn.). — Six specimens, both sexes, Divala, November 4–November 18.

Helminthophila peregrina (Wils.). — One ♀, Divala, October 29.

Protonotaria citrea (Bodd.). — Two males, Divala, December 10, and David, October 16.

Mniotilta varia (Linn.). — Three females, Divala, November 5 and December 7.

Cœreba mexicana (Scl.). — Four males, including one in nestling plumage, Divala, October and November.

Cyanerpes cyaneus carneipes (Scl.). — Sixteen specimens, both sexes, Divala, November and December.

Cyanerpes lucida (Scl. & Salv.). — One young male, Divala, November 16.

Chlorophanes spiza guatemalensis Scl. — One adult ♂, Divala, October 29.

Dacnis ultramarina Lawr. — One adult ♂, Divala, November 2.

Euphonia crassirostris Scl. — Seven specimens, both sexes, Divala, October and November.

Euphonia gracilis (Cab.). — Two specimens, ♂ and ♀, Divala, November 5 and December 6.

Euphonia luteicapilla (Cab.). — Twenty-three specimens, both sexes, Divala and David, October, November and December. Three adult males in this series have white, in varying amount, in the tail.

Calospiza larvata fanny (Lafr.). — Fifteen specimens, both sexes, Divala, November and December.

Tanagra cana diaconus (Less.). — Thirty-three specimens, both sexes, Divala and David, October, November and December.

Piranga rubra (Linn.). — Twenty specimens, both sexes, Divala, October, November and December.

Ramphocelus dimidiatus Lafr. — Twenty-three specimens, both sexes, Divala and David, October, November and December. These skins, as also the ones taken at Loma del Leon, Panama, by Mr. Brown, are referable to true *R. dimidiatus*, differing only from South American examples in averaging a trifle larger, and in the belly patch being not of quite such an intense black. They do not approach in any way *R. dimidiatus isthmicus* Ridgw. of western Panama.

Ramphocelus passerinii Bp. — One hundred and fifty-one specimens, both sexes, Divala and David, October, November and December.

Tachyphonus nitidissimus Salv. — Two adult males, Divala, December. The type locality of the species is Bugaba, Chiriqui.

Lanio melanopygius Salv. & Godm. — Nine specimens, both sexes, Divala, November and December.

Eucometes spodocephala (Bp.). — One adult ♂, Divala, December 16.

Saltator intermedius Lawr. — Ten specimens, both sexes, Divala, October and November.

Arremon aurantirostris Lafr. — Ten specimens, both sexes, one young

in nestling plumage, Oct. 27, Divala, October, November, and December.

Arremonops conirostris (Bp.). — Six specimens, both sexes, Divala, November and December.

Sporophila aurita (Bp.). — Five specimens, both sexes, Divala, October and November.

Volatinia jacarina splendens (Vieill.). — One adult ♂, Divala, November 17.

Icterus galbula (Linn.). — Two males, Divala, December 9.

Sturnella magna inexpectata Ridgw. — One ♀, David, October 16.

Amblycercus holosericeus (Licht.). — Nine specimens, both sexes, Divala, November and December.

Cacicus microrhynchus (Scl. & Salv.). — Five males, Divala, November and December.

Ostinops decumanus (Pall.). — One adult ♂, Divala, November 12.

Zarhynchus wagleri (Gray). — Three specimens, both sexes, Divala, November and December.

Cassidix oryzivora mexicana (Less.). — One adult ♂, David, October 15.

THE CLASSIFICATION OF BIRDS.

BY HUBERT LYMAN CLARK.

THERE is a good old saying that "fools rush in where angels fear to tread," and the writer is aware that in approaching such a very complex subject as the classification of birds, without far more experience than he has had, he is laying himself open to a very prompt and simple classification under the above given rule. His only plea is that a simple classification of birds, one comparable with the classification of other animals, is greatly to be desired, and he believes that in the field of pterylography a way to such an end may be found. If one takes the trouble to examine the classifications of birds as given in the most recent elementary zoölogies, and compares them with classifications by ornithologists like Gadow or Sharpe, it will be perfectly obvious that general zoölogists prefer to cling to the old, worn-out 'orders' of Cuvier and his immediate successors, than attempt to introduce their students to the score or more 'orders' of present-day authorities. The belief is very general among zoölogists that the *orders* of birds

do not correspond with the *orders* of other classes, being based on far less important structural conditions. That there is good ground for such belief is shown by the fact that the class Crustacea, with as many species as Aves, is very generally grouped in a dozen orders or less; the Gastropod Mollusks, with nearly fifty per cent more species than Aves, are almost universally included in *three* orders; while the schemes for avian classification contain twenty orders or more, or, worse still, are divided into *gens*, *super-orders*, *super-families*, and other indefinite groups which, to an elementary student only makes "confusion worse confounded." That this is a real difficulty in giving ornithology its proper place in a course of zoölogy, other teachers besides myself can testify.

The cause of this trouble, it seems to me, is to be found in the importance that has been placed on characters which are by no means fundamental in the structure of birds. Originally the orders of birds were based on characters of the bill and feet; but it was long ago recognized that those characters are very unreliable, because so readily modified according to habits and food. In seeking more stable characters, ornithologists turned to the skull and other parts of the skeleton, the muscles, the wings, and even the viscera. But as our knowledge of avian anatomy has increased, we have been forced to admit that in all these points, changes of habit are soon followed by changes of structure, and it becomes a matter of great difficulty to trace real relationship. Owing to the large number of possible combinations of characters, which ornithologists regard as of more or less importance, the comparatively homogeneous group of birds has been split up into numberless orders. The remedy is to be found in a rearrangement of avian characters, with a careful estimate of their relative value, so that those that are least liable to change shall be accorded the most weight. In Gadow's well-known scheme for the classification of birds, published in 1892, he made use of more than forty characters, to determine the mutual relationship of the groups. A careful examination of this list shows a very large number which are of slight value because of their marked tendency to be easily modified, while others are omitted which ought to be of great value because of their slight tendency to vary. For example, there are no characters of which use is made, connected with the reproductive, ex-

cretory or central nervous system. It may be said that these systems are too uniform throughout the class to be of any value in classification, but it is very possible that a more intimate acquaintance with their structure will make them of very great value.

The question now confronts us, What characters are of the most importance in determining the relationship between two birds, and what are of the least value? There can be little question that the least valuable characters are those connected with the form and external characters of the bill and feet. Somewhat more valuable, but still very uncertain, are the characters of the wings and tail, and hardly more valuable is the nature of the plumage, such as the presence or absence of down, aftershaft, tuft on oil-gland, etc. The arrangement of viscera, muscles, and blood-vessels, are of some value, but probably less than the characters offered by the skeleton. It must be borne in mind, however, that the skeleton, and especially the skull, would be very liable to marked changes, accompanying changes in the bill, feet or wings, so that skeletal characters are by no means as indicative of real relationship as many writers assume. Certain characters connected with breeding, as the condition of the young when hatched, are of considerable importance; but there is reason to believe that even these are rapidly modified under changed conditions. As already suggested, the structure of the urino-genital organs, and the central nervous system would probably be very slowly modified, and ought therefore to furnish some very valuable fundamental characters. It is the purpose of this paper to show that the arrangement of the contour feathers, that is, the *pattern of the pterylosis*, is a similar character, in that it is only slowly modified, and therefore serves as a most important clue to the relationship of the various groups of birds.

The general opinion among ornithologists at the present time is that the pterylosis offers us little assistance in determining the relationship of birds, because it is believed that the arrangement of the feathers is governed largely by the shape of the body, and that the distribution of the tracts depends to a considerable degree on the habits of the bird. It is hard to see how this opinion has arisen, for there is much evidence to the contrary. If one will compare a plucked Swift and Swallow, a Colie and Cuckoo, an

Auk and a Loon, it will at once appear that though the body shape is very similar, the pterylosis is strikingly different, while on the other hand, birds with very differently shaped bodies, sometimes have the pterylosis very much alike; for example, a Goose and Petrel, or (on the dorsal surface) a Loon and a Flamingo. That the pattern of the pterylosis is very slightly modified by changes in habit, is admirably shown in the Water-ouzels, where the feather tracts are similar to those of the Thrushes, although the habits of the bird have caused the development of a dense coat of down over the whole body, a condition unique among the Passeres. In the light of these facts it is clear that we cannot assume that the pattern of the pterylosis is a recently acquired and unstable character, and we must look for further evidence as to its value. An examination of some Hummingbird embryos, just before hatching, shows that the characteristic pterylosis is, even then, clearly marked out. This would seem to indicate a deep-seated character, for otherwise the feathers ought to appear uniformly on the back and underneath, and only assume the characteristic arrangement with the growth of the bird. A good illustration of the fact that the line of development of a special form of pterylosis would appear in the embryology of the bird is afforded by the Swallow, which, as is well-known, has a very characteristic and peculiar saddle-shaped dorsal tract. In a large series of young Eave Swallows (*Petrochelidon fulva*) from Jamaica, ranging in age from embryos which are just assuming the form of a bird up to those large enough to fly, I find that the dorsal tract as first marked out is much more like that of Swifts, than like the adult Swallow; that is, it is first a broad, dorsal patch with a small central apterium. Later on, it begins to assume more the condition characteristic of the adult, but that condition is not fully attained until the bird is able to fly. It seems to me that the young Hummingbirds, and the young Swallows together, show that the pattern of the pterylosis follows the same laws of heredity as other characteristics, and the later modifications of the pattern appear later in the development of the individual. Thus the Hummingbirds, being nearer the ancestral form in the pattern of the pterylosis, show that pattern from the start, while the Swallows, being more specialized, simply pass through that stage in the develop-

ment of their own characteristic pattern. A similar illustration is found in a comparison of the embryos of a Rail (*Rallus longirostris*) with those of a Heron (*Ardea tricolor*) which shows that the two, just before hatching, have very similar pteryloses, which are distinctly heronlike. A more important point shown by the Heron embryos, is that the powder-down tracts are a more recent acquirement than the pattern of the pterylosis, for only one of the three pairs is indicated at all, and the presence of that pair is shown only by the peculiar color and appearance of the skin. The pair present is the femoral. I thought I could find indications of the ventral pair, but those near the furcula are entirely wanting.

These facts, though few in number, seem to me to indicate very strongly that in the pattern of the pterylosis we have a character which has changed but slowly, and is liable to little variation, and is therefore of primary importance in seeking the proper classification of birds. Indeed there is little reason why the *general pattern* should change, for necessary differences in the thickness of the feather-coat would naturally be brought about simply by widening or narrowing the main tracts. That this is the case is readily seen by comparing the tracts of a Goose and a Petrel, where the pattern is essentially the same, but the tracts of the more active bird are much narrower. In the taxonomy of the Crustacea, a class characterized by a segmented external skeleton and jointed biramose appendages, the division into orders is based on the number and arrangement of segments and appendages; and in other classes of animals the primary divisions are based on variations in the principal character of the class. It is both fitting and desirable, therefore, that the great class Aves should have its orders based on variation in its striking character, — the body covering of feathers. Such orders would be clearly equivalent to the orders of other groups.

But is it possible to adopt any such standard and arrive at any definite results in the classification of birds? After a careful study of Nitzsch's work, and a review of my own in connection with it I find there are eight distinct, and, in general, easily recognized patterns of pterylosis in the class of birds. There are, besides, two very distinct groups of birds which have no apteria, but have

the body uniformly covered with feathers. It would be possible, therefore, to divide birds according to the pterylosis into ten orders, nine of which belong in the subclass generally known as Carinatae. The group Ratitae have so many characters in common which distinguish them from other birds, it is a convenience to regard them as a subclass, of equal rank with the Carinatae. So far as the pterylosis is concerned, they comprise, however, only a single order. This type of pterylosis may well be called

* STRUTHIONIFORM.

Adult without apteria or oil-gland; plumage soft and lax, intermediate between down and contour-feathers.

In the Carinatae, the adults all have contour feathers, the pterylae are generally clearly defined, and the oil-gland is usually present. If distinct apteria are wanting, the oil-gland is well developed. The following are the patterns of the pteryloses of the Carinate birds.

SPHENISCIFORM.

Adult without apteria, but with oil gland; plumage dense.

This style of pterylosis is characteristic of the Penguins.

COLYMBIFORM.

Upper and lower cervical tracts not separate until near shoulder.

Upper cervical tract deeply forked but branches not diverging.

Dorsal tract broad, separate from cervical, and without any apterium.

Humeral tract broad and distinct.

Femoral tracts small, mostly separate from dorsal.

Sternals broad, directly continuous with branches of the lower cervical, which is quite deeply forked; and with no side branch.

Ventrals *very* broad, directly continuous with sternals; ventral apterium narrow but broadest behind.

This style is characteristic of the Loons and Grebes.

ANSERIFORM.

Upper cervical tract not separated from lower until near shoulder; forked, branches diverging somewhat.

Dorsal tract directly continuous with upper cervical, thus enclosing a more or less elongated apterium.

Humeral tracts broad and strong, sometimes connected with the dorsal.

Femoral tracts large, united with dorsal.

Sternals directly continuous with lower cervicals, and usually with a prominent side-branch.

Ventrals very broad, directly continuous with sternals; ventral apterium very narrow, and not notably broader behind.

This style characterizes the Petrels, Albatrosses, Pelicans and other totipalmate birds, Auks, Geese, Ducks and Swans.

FALCONIFORM.

Upper cervical tract well-marked, usually narrow; strongly forked between the shoulders; slightly or not at all connected with the dorsal tract; branches diverging.

Dorsal tract very variable, either broad or narrow, forked or solid.

Humeral tracts strong but not very broad.

Femoral tracts wanting or very weak; the feathering of the tibia is usually very full and a strongly marked patch sometimes crosses the head of the tibia and runs along the femur a distance.

Lower cervical tract considerably forked.

Sternals very strongly marked.

Ventrals narrow but widely separated on belly; wider on the breast and more or less fused with the sternals; sometimes united only at the furcula (*Asio*), sometimes also touching at edge of sternum (*Strix*), and sometimes united the full length of the breast (*Pandion*).

This style is shown by Vultures, Hawks, Owls, and other birds of prey; and probably Parrots also.

PELARGIFORM.

Upper cervical tract divided very deeply on the neck but the branches not diverging.

Dorsal tract solid or deeply forked (toward rear), more or less connected with cervical.

Humeral tracts well marked.

Femoral tracts long but narrow, and not very strong.

Lower cervical tract similar to upper but the division is not so deep, and the branches tend to diverge.

Sternals broad (compared with the other tracts), continuous with or separate from the lower cervical.

Ventrals broad and continuous with the sternals, sometimes separated from the latter, for some distance, joining near the furcula.

This type characterizes the Rails, Cranes, Storks, Herons, Bustards, and Flamingoes.

CHARADRIIFORM.

Upper cervical tract sharply defined, not very deeply forked, the branches diverging.

Dorsal tract more or less forked (toward rear), slightly if at all connected with forks of upper cervical.

Humeral tracts narrow.

Femoral fairly strong, usually narrow and distinct.

Lower cervical tract very deeply forked, continuous with sternals.

Sternals moderate in size but strong.

Ventrals narrow or only moderately wide, well separated on the belly, joining the sternals on the breast usually near the furcula.

This type is shown by the Gulls, Terns, Plovers, Snipes, Sandpipers, etc.

GALLIFORM.

All the tracts broad, but usually well defined.

Upper cervical tract usually more or less merged with the dorsal, but sometimes more or less distinctly forked.

Dorsal tract broad, sometimes very broad posteriorly; often with a mid-dorsal apterium; occasionally connected with the femorals.

Humeral tracts broad and very strong.

Femoral tracts very large, sometimes uniting with the dorsal.

Lower cervical tract rather deeply forked, the branches continuous with the sternal tracts.

Sternals very strong, widest anteriorly, connected with ventrals near furculum or not at all.

Ventrals narrow, not widely separated on belly, narrowest anteriorly, united posteriorly in front of anus.

This type is shown by the Gallinaceous Birds, Curassows, and Tinamous.

COLUMBIFORM.

Upper cervical tract wide, strongly forked between shoulders, often united with lower cervical, until near the shoulders.

Dorsal tract very broad and diffuse, fairly separable from cervical, but inseparable from femorals.

Humeral tracts very broad and strong.

Femoral tracts large, not distinct from dorsal.

Lower cervical tract slightly or not at all forked, continuous with the sternals.

Sternals broad, completely united with the ventrals.

Ventrals broad, not widely separated, but not united posteriorly.

This type is clearly shown by the Pigeons and Sand Grouse.

PASSERIFORM.

Upper cervical tract narrow, well-defined, and continuous with the dorsal tract.

Dorsal tract not clearly distinguished from the cervical, more or less widened (often enclosing a prominent apterium), generally narrowed as it approaches the tail. The dorsal tract is frequently distinctly divided into two parts, the anterior of which is usually forked; less commonly the posterior part is forked.

Humeral tracts moderate, frequently narrow.

Femoral tracts usually weak and small, sometimes wholly wanting, and sometimes quite clearly defined.

Lower cervical tract more or less forked.

Sternals usually strong and well-marked.

Ventrals rather narrow, widely separated on belly, and not reaching the anus; usually not separated from sternals, but sometimes partly distinct.

This type is shown to a greater or less degree by all those birds, usually classed as Cuculiformes, Coraciiformes and Passeriformes. Its varieties are fairly constant and may assist in the arrangement of these groups in suborders and families.

The following table will help to make the character of the ten types more easily grasped, but it must be borne in mind that this arrangement is very artificial and is in no sense a 'Key.'

| Apteria present. | | Apteria wanting. | |
|---|--|--|--|
| Upper cervical tract not as above. | Upper cervical tract not as above. | Oil gland present | Oil gland wanting |
| Femoral tracts very broad, often united with the dorsal tract. | Femoral tracts narrow, weak, or wholly wanting. | Ventral tracts much narrower than sternals, converging on the belly | Ventral tracts very broad, diverging on the belly |
| Dorsal tract not as above. | Dorsal tract directly continuous with the cervical and containing a more or less elongated narrow apterium | Dorsal tract directly continuous with the cervical and containing a more or less elongated narrow apterium | Dorsal tract directly continuous with the cervical and containing a more or less elongated narrow apterium |
| Ventral tracts wide, continuous with sternals, and not united with each other | Ventral tracts not directly continuous with sternal tracts, narrow and united posteriorly | Ventral tracts not directly continuous with sternal tracts, narrow and united posteriorly | Ventral tracts not directly continuous with sternal tracts, narrow and united posteriorly |
| <i>Columbigform.</i> | <i>Galliform.</i> | <i>Auseriform.</i> | <i>Auseriform.</i> |
| <i>Passeriform.</i> | <i>Passeriform.</i> | <i>Pelagiform.</i> | <i>Pelagiform.</i> |
| <i>Charadriiform.</i> | <i>Charadriiform.</i> | <i>Colymbiform.</i> | <i>Colymbiform.</i> |
| <i>Falconiform.</i> | <i>Falconiform.</i> | <i>Sphenisciform.</i> | <i>Sphenisciform.</i> |
| <i>Struthioniform.</i> | <i>Struthioniform.</i> | <i>Sphenisciform.</i> | <i>Sphenisciform.</i> |

These ten types are so constant and in general so easily recognized, it seems to me they might well be made the central characters of ten orders; and we should find that such orders are not unnatural groups, but are characterized by many other important features. For example, the birds with the charadriiform pterylosis are nidifugous, schizognathous, with two carotids and aquincubital wings. There are, perhaps, other characters, but I have not attempted to determine them all. Such a group might well be called the Charadriiformes. Or the birds with the falconiform pterylosis are all nidicolous, desmognathous, with aquincubital wings, two carotids and epignathous, cered bill, and may well be designated as Falconiformes. That it is not unnatural to associate the Parrots with raptorial birds, will appear to anyone who will examine Gadow's comparison of the two groups, which shows that out of forty characters they have twenty-nine in common, including those which seem to me must be granted to be of the most significance.

It is of interest to see how basing classification primarily on the pterylosis will affect the position of certain doubtful forms. As is well known, the Tinamous will belong with the Galliformes and the Sand Grouse with the Columbiformes. The Flamingo is distinctly pelargiform. *Opisthocomus* is not at all galliform, but, curiously enough, is quite distinctly falconiform. The Bustards are clearly pelargiform and thus quite separate from the Charadriiformes. *Psophia*, on the other hand, is apparently more like Plover than Stork. The Auks are not nearly related to the Gulls and Terns, but are not far from the Petrels, and very possibly the Penguins are merely a further specialized shoot of the same branch.

It would give a very wrong impression, were I to close this paper without referring to any of the difficulties which lie in the way of making such use of the pterylosis for a primary character, as I have suggested. The number of orders would not be reduced thereby as much as was to be hoped, but ten is certainly better than twenty. More important than this, however, is the fact that the orders are by no means equally well-defined. The Anseriformes, for example, are difficult to characterize except by the very distinctive pterylosis, while the Colymbiformes and Galli-

formes are quite easily defined, with many important characters. A greater difficulty still is found in the fact that certain birds, such as *Buceros* and *Colius*, have a pterylosis so peculiar it is hard to compare it with any of the types. Moreover, various birds show a pattern of pterylosis, which at first glance is more like some totally different group, than like their admittedly nearer allies. Such, for example, are the Albatross, *Opisthocomus*, and Goatsuckers, all of which are strikingly falconiform!

These difficulties, however, are none of them insuperable, when we consider three important facts. First of all, our knowledge of pterylography is very deficient; Nitzsch's work is based so largely on dried skins that his figures are often faulty, and conclusions drawn from them are liable to error; for example, his statements regarding *Podargus* and the relationship between the Goatsuckers and Swifts, are not borne out by examination of better material than he possessed. Secondly, the study of the development of the tracts has not yet received any attention, while, as I have already shown, it is a most important factor in determining the type of pterylosis and the value of the pterylographical characters. Finally, the pattern of the pterylosis must not be regarded as an infallible guide, but must be followed with caution. Although it is a deep-seated character, it is by no means beyond modification and even radical change, and where its leading is dubious, it must be controlled by the evidence offered by other characters. Some use in taxonomy has been made hitherto of certain pterylographical characters, but only in a small way, and it is my desire to call the attention of ornithologists to the great value that the *entire pterylosis pattern* has in classification.

A LIST OF THE HAWAIIAN BIRDS IN THE ST. LOUIS
COLLEGE COLLECTION, HONOLULU, H. I.,
INCLUDING RECORDS OF SEVERAL
NORTH AMERICAN SPECIES.

BY WILLIAM ALANSON BRYAN.

THE isolated position of the Hawaiian Islands has long made them of great interest to ornithologists in general, while American observers, especially since the newly awakened interest in the group, have come to look upon them as an important outlying station where the occurrence of some of the wide-ranging continental forms may be studied with advantage.

The local observer finds the study of the indigenous avifauna is made much more interesting by noting the rare visitors which from time to time come to our shores, since they may be taken as indicating the probable direction whence the native birds have come, and in this way aid in tracing out their affinities.

The dearth of competent observers in remote places has always been deplored. It is on account of this fact that I gladly availed myself of the opportunity offered to carefully examine the interesting collection of Hawaiian birds, which for the most part has been brought together through the painstaking efforts of Mr. M. Newell, and which is now in the possession of St. Louis College, Honolulu.

Brother Matthias, as Mr. Newell is familiarly known to the Catholic brotherhood, came to the Islands some seventeen years ago from San Antonio, Texas, where he had already gained the local title of 'Rattlesnake-catcher,' owing to his zeal in the various branches of natural history. From the Brothers at the college I learn that after a year's residence in Honolulu he moved to Wailuku on Maui, where he spent fourteen years in the Catholic mission in Iao valley. It is at this point that most of the collection noted below was made. From Wailuku Mr. Newell was removed to Hilo on Hawaii, where he still carries on his work and observations.

I cannot too earnestly call attention to the value and importance which attaches to a local collection of the rare and curious birds

which come into the hands of persons scattered about these islands. There are still a number of sea and shore birds which should be taken here.

I take this opportunity to thank the authorities of the college for the generous assistance they have rendered in placing the records of the museum as well as the specimens at my disposal, and especially to Brother Mark and Brother Alfred am I indebted for much additional matter.

1. *Larus barrovianus*. POINT BARROW GULL.—[193, ♂. *Larus argentatus*.¹] So far as I am aware this is a record of the fifth bird which has been actually taken on the islands, though it is reported as having been seen on a number of occasions. However, the liability to confound one gull with another, especially among immature and winter birds seen on the wing, is very great and such evidence must be regarded as unsatisfactory. This bird, as well as the species following, were referred to *L. argentatus* in the museum catalogue. The specimen seems to be an immature winter bird, as there is considerable streaking and mottling with pale brown about the head and neck; the mantle is clouded and mottled with brown; the upper and under tail-coverts are marked with brown, while the tail-feathers are scarcely marked, being almost uniform with the primaries, which are just off from white. The mounted specimen measures: wing, 16.50; tail, 6.25; culmen, 2.10; tarsus, 2.60; midtoe, 2.75; depth of bill at base, .65; depth at gonys, .75.

2. *Larus californicus*. CALIFORNIA GULL.—[13, ♀. *Larus canus*. Mounted: Bro. Matthias.] This, the first specimen taken here, was secured probably on Maui and seems to correspond with the descriptions of the young in winter or immature birds. The head and neck are much streaked with grayish brown; the basal portion of the beak is lighter than the tip, which is blackish. There is some gray on the mantle and scapulars, but the whole back has a mottled appearance. The tail-coverts are much barred and the tail-feathers, brownish for the most part, have faint white tips. The primaries are umber brown with no white tips. The grayish wedges begin to show on the fourth primary and there is some indication of whitish on the tip. The underparts are brownish white without any distinct mottling. Wing, 16.50; tail, 6.40; tarsus, 2.25; midtoe and claw, 2.10; culmen, 2.10; depth of bill at gonys, .70. This is not an unexpected visitor since it frequents the greater part of the western coast of North America.

¹The names, numbers, and notes enclosed within brackets are taken from the Records of the College cabinets of St. Louis College, Honolulu, Island of Oahu, H. I.

3. *Larus delawarensis*. RING-BILLED GULL.—[197, ♂. Mtd. Bro. Matthias.] This is unmistakably an immature bird since the head is streaked with dusky brown and the gray of the mantle is more or less interrupted by the buffish white assumed by certain phases of the young.

The secondaries are gray at their bases with darker centers and pale borders. The primaries are black without white tips, while there still remain a few brown feathers about the bend of the wings. The tail-feathers are white basally with a dark brown subterminal bar followed by whitish tips. Bill lighter towards the base but crossed by a broad black band in the region of the gonys followed by a lighter tip. This bird inhabits the whole of North America, wintering along both coasts, hence it is not to be greatly wondered at that it should at intervals stray to these islands. The mounted bird measures: wing, 14.25; tarsus, 2.00; mid-toe and claw, 1.70; tail, 5.30; culmen, 1.50; depth of bill at gonys .50.

A second specimen of *Larus delawarensis* has been recently taken in the Hawaiian Islands. It was secured by Mr. G. P. Wilder of Honolulu on the coast of the island of Molokai, near the landing of Haunakakai, on the first of February, 1901, during the time of the kona (*i. e.*, southerly) storm which prevailed for some three weeks. The bird (B. P. B. M. No. 9892) was kindly presented to the museum by Mr. Wilder. It seems to be an immature winter specimen with the head and neck white, somewhat streaked with brownish.

4. *Larus franklinii*. FRANKLIN GULL.—[195, ♂. Mtd. by Bro. Matthias.] This most interesting specimen appears without further note. It is the first record of *L. franklinii* in this portion of the ocean. The bird is almost if not quite mature and agrees closely with the winter phase of plumage, the head being flecked with white, showing the most white on the throat, mottling the plumbeous of the head and neck. The characteristic elongated white patches, one above, the other below, the eye, are conspicuous. The mantle is blue gray. Wing, 11.25; tail, 4.25; tarsus, 1.47; midtoe and claw, 1.50; culmen, 1.25; depth of bill at base, .30; depth at gonys, .32. The specimen differs from *L. philadelphia*, the Black-headed Gull which might be expected to stray down from the California coast, in its larger measurements, reddish feet and legs, darker mantle, totally different wing pattern, different coloration of the tail, etc. Thus the Hawaiian Islands may be added to the habitat of this species.

5. *Sterna lunata* Peale. GRAY WIDE-AWAKE.—[190, —?] From the record I copy the following note: "The bird belonged to Mr. J. J. Williams who, when it died, brought it to the college. There it was skinned and sent to Bro. Matthias at Wailuku, who mounted it." The specimen probably came from Laysan or some of the more western islands of the group.

6. *Diomedea nigripes*. BLACK-FOOTED ALBATROSS.—[40, ♀; 41, ♂.] The record states, "these two specimens were brought from Laysan Island by Mr. J. J. Williams." Brother Mark informs me that they kept the birds alive quite a time before they were finally dispatched and mounted by Bro. Matthias.

7. *Æstrelata hypoleuca* *Salvin.* BONIN PETREL. — A specimen in fine adult plumage and well mounted.

8. *Phaethon lepturus* *Lacép. & Daudin.* WHITE-TAILED TROPIC BIRD. — [♂ and ♀ No. 2; Juv., No. —?; Tropic Bird; native name 'Koaë.'] The three birds, two fine adults and the young, taken on Maui, show the following measurements:

| Sex. | Length. | Wing. | Tail. | Cent. tail feathers. | Tarsus. | Toe. |
|------|---------|-------|-------|----------------------|---------|------|
| ♂ | 27.50 | 10.25 | 4.40 | 17.80 | 80. | 1.40 |
| ♀ | 27.50 | 10.40 | 4.40 | 17.50 | 77. | 1.42 |
| Juv. | 15.50 | 10.00 | 4.40 | — | 72. | 1.35 |

9. *Anas wyvilliana* *Scl.* HAWAIIAN DUCK; KOLOA MAOLI. — [43, ♀, mounted.]

10. *Spatula clypeata.* SHOVELLER. — [36, ♂, mounted, Bro. Matthias; passes by the name of 'Broad-bill' or Shoveller.] So far as I am able to make out, this is typical *S. clypeata* in the fully adult plumage.

11. *Dafila acuta.* PINTAIL; KOLOA MAPU. — [37, ♀, 37a, ♂. It passes as Pintail or Sprigtail.]

12. *Charitonetta albeola.* BUFFLE-HEAD. — [No. —? ♀, mounted, Bro. Matthias.] The bird is in perfect winter plumage. This is the first record of the capture of this wide-ranging form in the Hawaiian Islands, though it is common enough along the west coast of America; breeding far north. The specimen was shot on the island of Maui.

13. *Nesochen sandvicensis* (*Vig.*). HAWAIIAN GOOSE; NENE. — [45, 189 ♀, mounted. The natives call the bird Nene.]

14. *Branta nigricans.* BLACK BRANT. — [35, ♀. Brant.] The records state: "This individual had for a number of months been the bane of the hunters that were wont to shoot the ducks that frequent the ponds in the neighborhood of Spreckelsville and Kahului. This goose made herself obnoxious by giving alarm at the least danger, thus causing the ducks to fly away. She was continually in their company." This specimen is in fully adult plumage and is the second to be taken here.

15. *Nycticorax nycticorax nævius.* BLACK-CROWNED NIGHT HERON; 'AUKU KOHILI.' — [10, ♂, Speckled Heron; Hawaiians call it Auku. 29, ♀, caught in Ieo Valley, Maui, by Mr. Anton Foustino. The Hawaiian name is Auku kohili, when it is grown. 39, ♂.]

The young and adult of this form have long puzzled the Kanaka as well as the Haoli ornithologists. It is with some reluctance that they now admit that they are one and the same species.

16. *Proganula palmeri* *Froh.* LAYSAN RAIL. — [♀, 'Wingless' Rail.]

17. *Gallinula sandvicensis* *Streets.* HAWAIIAN GALLINULE; ALAE. — [18, ♂. Mud-hen.]

18. *Porphyrio melanotus* Newt. — [23, ♂. 'Sultana Bird.' Caught in Waialua, Oahu, by 'Kauka' Wilder.] This bird is said to have been introduced into the islands. I have not been able so far to find out who brought it here.

19. *Fulica alai* Peale. HAWAIIAN COOT; ALAE KEOKEO. — [32, ♂. Mud-hen.] This adult mounted specimen measures, wing, 7.10; tail, 1.50; tarsus, 1.80; midtoe and claw, 3.00; hindtoe, 1.00; bill, with shield, 2.00.

20. *Crymophilus fulcarius*. RED PHALAROPE. — This interesting specimen makes the third record of this species being taken on the group.

21. *Himantopus knudseni* Stejn. HAWAIIAN STILT; AEO. — [6, ♂. Stilted Plover.]

22. *Tringa acuminata* (Horsf.). SHARP-TAILED SANDPIPER. — [194, ♀. Mounted by Mr. Newell.] This specimen, one in the Bishop Museum, and one listed by Dr. Schauinsland from Laysan, are the only ones that have come to notice, though it will without doubt be taken from time to time in company with the winter shore birds from the mainland. The specimen is an adult winter bird.

23. *Heteractitis incanus* (Gmel.). WANDERING TATLER; ULILI. — [26, ♀. Ulili. Caught at the Mailuku streams, Maui.]

24. *Limosa lapponica baueri* (Naum.). PACIFIC GODWIT. — Though the specimen is without data it was probably secured by Mr. Newell on Maui. A specimen in possession of Mr. Francis Gay, the one listed by Dr. Schauinsland from Laysan, and the present specimen furnish the basis on which the record of the species on the islands depends. The two which I have examined are winter visitors.

25. *Calidris arenaria*. SANDERLING; HUNAKAI. — [22, ♂, mounted by Bro. Matthias.]

26. *Charadrius dominicus fulvus*. PACIFIC GOLDEN PLOVER; KOLEA. — [21, ♀; 34, ♂; 216, ♂. Hawaiians call this bird Kolea.] The specimens are in various seasonal plumages.

27. *Arenaria interpres*. TURNSTONE; AKEKEKE. — [33, ♀; 21, ♀. Turnstone. Hawaiians know it by the name of Ukeke, Ukekeke and Akekeke.]

28. *Lophortyx californica*. CALIFORNIA PARTRIDGE. — [185, ♂.] This species has been introduced from the mainland, and was formally, I am told, more abundant than of late years.

29. *Phasianus torquatus* Gmel. RING-NECK PHEASANT. — [185, ♂.] Introduced.

30. *Turtur chinensis* (Scop.). CHINESE TURTLE-DOVE. — [4, ♂. Singapore Dove.] Introduced.

31. *Buteo solitarius* Peale. HAWAIIAN HAWK; IO. — [188. This bird was shot in Kona, Hawaii, by Emil Wuske (a German taxidermist) and the skin preserved and sent to the college museum.] The bird is adult. Wing, 11.25; tail, 6.25; tarsus, 2.50; midtoe and claw, 1.75; culmen, 1.25.

32. *Asio accipitrinus*. SHORT-EARED OWL; PUEO. — [24, ♀. The Hawaiians call it Pueo.]

33. *Corvus hawaiiensis* Peale. HAWAIIAN CROW; ULALÁ.—[No.—? ♀, Hawaii, April 8, 1896; No.—? No data.] The two crows are mounted. From them I take the following measurements:

| Sex. | Wing. | Tail. | Tarsus. | Mid-toe. | Culmen. | Depth of bill. |
|------|-------|-------|---------|----------|---------|----------------|
| ♀ | 13.00 | 8.50 | 2.15 | 2.30 | 2.45 | 1.15 |
| — | 13.10 | 8.50 | 2.45 | 2.20 | 2.00 | 1.00 |

34. *Acridotheres tristis* (Linn.). MINA.—[1 pair, mounted. This is a pest introduced by Dr. Hillebrand.] There are in all ten specimens of this species in the collection. The bird has a rather unenviable reputation in the islands. Experiments are under way at the Bishop Museum whereby it is hoped to establish more nearly the exact relation which the Mina bears to his friends and foes.

35. *Vestiaria coccinea* (Forster.). IIWI.—[25, ♀.] This is a young bird and the change of plumage exhibited is very interesting. There is also an adult specimen in the collection from Maui.

36. *Himatione sanguinea* (Gmel.). APAPANE.—[No. 14, ♂. This bird is common all over the group and furnishes the crimson feathers for decorative purposes. It is also called Akapane.] This specimen is from Maui. The feathers, however, were not used nearly as extensively as were those of the previous species.

37. *Chlorodrepanis wilsoni* (Roths.). MAUI AMAKIHI.—[No. 17, ♂, No.—? Amakihi, *Drepanis flava*. By some collectors the name of the Amakihi is said to be *H. stejnegeri*. I am not able to state how the name of the Kauai bird should have been given to the Maui bird. Perhaps 'off hand.'

38. *Oreomyza newtoni* (Roths.).—An adult bird with the breast bright lemon yellow, the upper parts olive green, and with a straight bill.

39. *Oreomyza flammea* (Wilson). KAKAWAHE.—A male bird in rich scarlet plumage. It probably came into the collection through Mr. Flood from Molokai, which, I believe, is the only place where it has been thus far taken.

40. *Hemignathus procerus* Cab. KAUI AKIALOA.—[No.—? Hanapepe Valley, Kauai.] This specimen seems to have come from Mr. Gay's collection.

41. *Hemignathus affinis* Roths.—[From Maui. ♀.]

42. *Heterorhynchus wilsoni* Roths.—[Nukupuu. Brilliant Half-bill. Kona, Hawaii, 4000-5000 ft.]

43. *Psittacirostra psittacea* Gmel. OU.—[Ou. Hawaii. *P. psittacea*, ♂.]

44. *Rhodacanthis palmeri* Roths.—An adult ♂.

45. *Moho nobilis* (Merrem.) O-O.—[O-o. Hawaii. *A. nobilis*, ♂.]

NESTING HABITS OF THE EVENING GROSBEEK
(*COCCOTHAUSTES VESPERTINUS*).BY FRANCIS J. BIRTWELL.¹

Plate VII.

Photographs from nature by the author.

JUNE 5, 1901, Willis, New Mexico. — Bright and pleasant, temperature 70° F. In company with Olivia I took a short stroll on the bench west of the cabin. There the slope showed abundant signs of avian activity. Evening Grosbeaks were abundant and common, their shrill whistles not infrequently preventing the identification of other sounds. Both males and females were present, and I observed several feeding upon the ground, where they hopped very sparrow-like.

June 6. — Evening Grosbeaks were common, apparently doing nothing but shriek.

June 11. — Olivia and I to-day went up, as usual, to the bench. The usual birds were seen and nothing important noted except the two finds of the day. A male and female Black-headed Grosbeak flew to the ground, and, a moment later, came back, the female first, bearing nesting material. Both flew to a large limb of a great pine tree by the trail, where the material was undoubtedly deposited. I was, however, unable to see distinctly.

June 18. — I shot a female *Coccothraustes vespertinus*; bill apple-green, legs light brown. The stomach was filled with hairless caterpillars about half an inch long.

June 20. — Our last finds to-day were the most important I have ever made, ornithologically; and the secret of the shrieking Evening Grosbeaks about the slopes is explained. The quick flight of a female (closely followed by a male) bearing nesting material

¹ From the Field Notes of Francis J. Birtwell, Pecos River Forest Reserve, Summer of 1901. Copied and completed by his wife, Olivia M. Birtwell.

[This article has a peculiarly sad interest, owing to the fact that the author met with a fatal accident while conducting these investigations. See 'Notes and News' in the present number of 'The Auk.' — *Edd.*]



FIG. 1. NEST AND EGGS OF EVENING GROSBEEK. $\frac{1}{2}$ natural size.



FIG. 2. EVENING GROSBEEK ON NEST. Photographed in Situ.

directed me to a tree growing almost in the yard, — a pine; and, as I watched, the bird descended to her nest, situated on a horizontal limb overhanging the road. We had hardly finished watching the pair, the male of which did absolutely no work whatever but whistled peculiar, sharp notes from a tree near, when we noticed a similar performance which led us to an immense spruce-tree growing near by, where the female settled upon a nest near the end of a swaying limb. She remained there for some minutes, the male whistling meanwhile and flying about from tree to tree. Then she left and both fed about the vicinity. Many times she returned to the nest, apparently unfreighted, and we left them feeding about the trees near by.

June 22. — During the night some mystic power gifted my eyes as well as Olivia's, for every lump on a tree that we looked at to-day turned into a nest and every bird with any pretensions or right to be breeding offered introduction to its home with implied invitations for future calls. This latter, however, was not necessary.

It began by my supposed Black-headed Grosbeak's nest of the 11th turning into that of the Evening Grosbeak, and throughout the morning the pair of birds entertained us royally. The female sat upon the nest, on and off, and during the former periods, the male howled encouragingly near in tones only the avian ear could deem *dulce*. Then from the nest, with curious, soliciting cries and fluttering wings, like a great overgrown nestling, she followed him about and by the patient bird was regularly fed. He was willing, however, for when I ceased, it was easy to lead her back to the nest, from which he departed to shriek about the neighboring trees when she had settled herself.

All three Evening Grosbeak's nests are within 100 yards of each other, and, since several other pairs are about, we infer that the species breeds gregariously and somewhat uniformly, too.

After supper, just before dusk, we revisited the scene of the morning's operations to observe the evening attitude of the birds. All the Grosbeaks were silent and apparently absent.

June 23. — Olivia and I visited again the Vale of Vespertina, as we have named the place where *Coccothraustes* and so many birds abound, — the slope behind the cabin. I was yet too lamed from

climbing to get to my Grosbeak's nest so we merely watched the wonderful avian life going on about us in the musical, deep-voiced pines.

The Grosbeaks were all silent and came into the trees from distances. At times the coaxing voices of the females were heard and a shrill whistle or two, but the silence was noticeable. I found two more nests (Grosbeak's), one at the end of a spruce limb near the others, the other similarly placed but farther back some hundreds of yards. The birds were seen on and off the nests at various times. The nest of the great pine, taken for the nest of *Habia melanocephala*, had the bird sitting. With shot I cut the twigs off all about, but she merely elevated her head. The climb is risky and I am married. Unless I am forced I shall not attempt to collect the set but will secure specimens of young later on.

June 26. — The actions of the Grosbeaks assured us that the sets of eggs were complete and should be taken without further delay. Accordingly this morning we went to the spruce tree where the nest was discovered June 20, as recorded in the notes for that day. The male bird approached the vicinity of the nest several times as we prepared for the climb, uttering his sharp call, and the female answered, at intervals, with her querulous note from the nest.

The tree was about seven feet in circumference and studded for some distance from the ground with short, barkless limbs, of which some would support a man's weight and some had to be chopped off in making the ascent. Measurements showed the height of the nest above the ground to be 41 feet. The birds had evidently selected the location of their domicile with a view to doing as little work as possible. It was visible from no direction but the one from which we had discovered it and was placed flatly upon the horizontal branch with a smaller fork propping it on one side and heavy clusters of needles surrounding it. It was composed of flimsy material and a very little of it, the floor so thin as to barely cover the underlying branch.

From the only resting-place, the fork made by the tree-trunk and the branch next above the one on which the nest rested, Mr. Birtwell scooped the eggs, one by one, from the nest with a tiny

net on the end of a trout-rod and loosened the nest from the bough. There were four eggs, in color, size, form, texture and markings indistinguishable from those of the Red-winged Blackbird.

The sitting bird left her trust only when the cries of warning from her mate became most frantic, and the pair were loudly assisted by two other Grosbeaks, who flew madly about with them. Only the female was taken, the male perching far out of harm's way.

The next nest, the one found in the spruce tree June 25, was harder to get. As we approached the tree, but ten rods from the other, all the Grosbeaks in the neighborhood seemed to have taken the alarm and to keep a corresponding silence. This nest was not so well hidden. From the ground we could see the sitting bird, seemingly calm in her dizzy cradle, which swayed in the gentle breeze at the end of the long, slender branch, 46 feet above us. Moreover, a fact important to the egg-crank, there was no branch above or below the nest for some distance. Only a small twig helped to hold the frail structure in place.

With a long rope tied to himself and the tree trunk, Mr. Birtwell crawled out on the all too small branch to a point where he could reach with outstretched hand to loosen the precious, egg-filled nest, and placed it between his teeth. Thus burdened, he cautiously backed to comparative safety and there packed the three blue treasures in cotton. The owners of this nest had to mourn alone, no others of their tribe appearing. Both birds were, with difficulty, shot. Both flew. The female was found in hiding, standing behind a small gray weed. The male eluded us and, as we had at least one more Grosbeak's nest to collect, we determined that the next must furnish a male bird, if it took a day's work.

As may be conjectured, this nest was more strongly built than the first, the difference being in the greater amount of material used and the more secure fastening to the bough. But certain it is that the Evening Grosbeak puts little work into the building of her nest. The outside is of a few rather coarse sticks. Usnea is wadded together next and fine rootlets make the lining.

Both sets of eggs were slightly incubated so that we concluded that the second set of three was complete.

GENERAL NOTES.

Capture of Sabine's Gull in Wisconsin.—On Oct. 7, 1900, a local sportsman brought me a fine specimen of *Nema sabinii* which he had killed that morning from a boat in the center of Delavan Lake. The bird is a male, young-of-the-year, and was alone. — N. HOLLISTER, *Delavan, Wis.*

Snowy Heron in Alberta.—I have recently mounted a fine adult male Snowy Heron (*Ardea candidissima*), shot on May 11, 1901, near Pincher Creek, about 90 miles south of Calgary. The bird was in good condition, and is a very unusual record, I presume, for this locality.

Last fall I secured two fine specimens of Ross's Snow Goose (*Chen rossii*); they appear to pass right through this district on their migrations. — G. F. DIPPIC, *Calgary, Alberta.*

A New Bird for the State of Ohio — *Ardea cærulea*.—On August 1, 1901, I observed two birds of this species on the banks of the old arm of the Scioto River, one of which I shot after an exciting chase of about three hours. It proved to be a young male of *Ardea cærulea* (Little Blue Heron), being pure white in color, but having the tips of the first seven quills of each wing of a slate blue color. It had the following measurements: Extent, 93 cm.; wing, 25.5 cm.; tarsus, 9 cm.; bill, 6.5 cm.; tail, 11 cm.; length without bill, 48.2 cm. On August 3 another specimen, a young female, was brought in to me by a man who wanted it mounted; it was shot on Sunfish Creek, Pike Co., Ohio. A third specimen was also shot there, while a fourth, also a young female, was brought to me on August 16, shot on the banks of the Scioto River, while four more were seen at the same time. Dr. Wheaton, writing in 1882, states that the *Ardea cærulea* "probably occurs in the southern portion of the State, but had not been positively identified within the State's limits." As I have not seen anything else in print to prove the existence of this species in the State, I believe I am correct in heralding it as a new bird for the State. The number of specimens—four shot (two in my collection, two mounted for other parties) and four seen, making eight in all—is, under these circumstances, certainly remarkable, while the age of the birds, as also the time of the year, would make it highly probable that they had been, bred in the State. — W. F. HENNINGER, *Waverly, Ohio.*

A Band-tailed Hawk's Nest — An Arizona Incident of Biographical Interest.—In a small cañon in the western foothills of the Rincon Mountains, about twenty-one or twenty-two miles east of Tucson, stands a medium sized cottonwood tree in which hawks have nested for many years. The old stick pile on which so many generations of birds have been raised has become quite bulky through its annual accretion. In the spring of 1886 I was told by parties coming in from the San Pedro

that a pair of "black hawks" had taken possession of the old nest. As such birds were not common thereabouts the statement was worth looking into. I reached the tree just before sundown and to my delight I found things as represented and that one bird then occupied the nest. It was black sure enough, and resented interference with many angry screams as it circled above the tree. It proved to be a male Band-tailed Buzzard (*Buteo abbreviatus*). Unfortunately the female, although seen at a distance, failed to respond to the cries of her mate, and what was still more unfortunate the nest contained no eggs. It had been newly lined with leaves from the tree and was apparently ready for housekeeping. I waited till noon the day following in the hope of being able to make a closer acquaintance with the mate of the bird I then had, but had to leave without being thus privileged.

I subsequently learned from the late Major Chas. E. Bendire that he had, during the spring of 1872, climbed this same cottonwood tree and had examined the nest in question. He was at that time camped on the Rillito and had, while scouting, seen the nest. Some days later, as no hostile Indians were known to be about, he returned to the tree and climbed to the nest, which is located in a fork of the tree about 40 feet up. While examining the nest he happened to look in the direction of the opposite hill and saw an Indian watching him from behind a giant cactus with which the hills thereabouts are thickly covered. To be caught meant a lingering death at the stake, to escape, under the circumstances, seemed almost impossible, but he did. He pretended not to have seen the Indian and after having apparently satisfied himself about the nest he slowly descended the tree, but no sooner did his feet touch the ground than he made a run for his horse which was tied a short distance below. As he did so about thirty Indians gave chase, but he fortunately got away. — HERBERT BROWN, Yuma, Arizona.

Nesting of the American Rough-legged Hawk in North Dakota. — The nesting of the American Rough-legged Hawk (*Archibuteo lagopus sanctijohannis*) within the borders of the United States is so rare an occurrence that it may be worth while to record the breeding of a pair of these birds in Nelson County, North Dakota, this year. Our guide, Mr. Alfred Eastgate, a naturalist and taxidermist of considerable experience, who is quite familiar with this species, which is abundant there in winter, told us that the pair had nested in this vicinity for several years. We first saw the nest on June 4, 1901, as we were driving along near a narrow strip of timber on the edge of a lake. The nest was conspicuously located in an isolated swamp oak at the end of the timber, so that it could be plainly seen from a distance, and as we drew near we could see the head of the hawk as she sat upon the nest. Although the nest was only thirty feet from the ground the hawk would not leave it until we rapped on the tree, when she flew slowly off and perched on a tree near by; we had a good look at her at short range which left no doubt in our minds as to the

identification. She was in full dark plumage, the darkest phase I have ever seen in this species, and the feathering on the tarsi was clearly noted. The nest was a large one, measuring two feet in diameter by one foot deep outside, the inner cavity measuring nine inches across by four inches deep. It was built in a crotch of the main trunk of the tree, resting partially on some smaller branches; it was made of large sticks and lined with pieces of dry flags and shreds of the same, with a few sprigs of green leaves. It contained two fresh eggs which we left for future reference, supposing that the set was incomplete. We visited the locality again on June 7 and had another good look at the bird, sitting on a fence-post, but there were still only two eggs in the nest.

As we had to leave this vicinity on the following day we collected the set of two eggs, which is now in the collection of Rev. H. K. Job of Kent, Conn. Mr. Job visited the locality again on June 20 but found the nest deserted. — A. C. BENT, *Taunton, Mass.*

Melanerpes erythrocephalus Breeding near Boston.— On the 26th of June, 1901, I saw a pair of Red-headed Woodpeckers feeding their young in Newton, Mass., the nest being in a dead stump at a height of twenty or twenty-five feet from the ground. According to Messrs. Howe and Allen's 'Birds of Massachusetts' this would seem to be the first nest ever recorded from eastern Massachusetts, although Mr. Brewster, in his edition of Minot, speaks of one found in Brookline in 1878. — BRADFORD TORREY, *Wellesley Hills, Mass.*

Discovery of the Egg of the Black Swift (*Cypseloides niger borealis*).— On the morning of June 16, 1901, I, with a companion, started out with the intention of taking a few sets of Cormorants' eggs on the cliffs a few miles west of Santa Cruz, California. On reaching the locality, I noticed a pair of Black Swifts flying about over the cliffs, much lower than they usually fly. One bird rose high in the air and struck off in a bee line, at the rate of a mile a minute. I then resumed my search for the Cormorants, which I found on the face of the cliff, where the shore line turns sharply inland and about where the Swifts had been seen.

After throwing clods and stones for some time, to flush the cormorants in order to ascertain whether the nests contained full sets, we then, with the aid of a rope ladder and a pole and dipnet, took two sets of Baird's Cormorant containing four eggs each and one of Brandt's Cormorant containing three eggs, from nests situated about 25 or 30 feet from the top of the cliff.

After moving my ladder a little, I proceeded to reach out and down for a more distant set of Baird's Cormorant eggs when suddenly, right from under the pole and not more than three or four feet from my hand, a Black Swift flew out and down toward the water and passed around the angle toward the ocean. It did not rise above the cliff, in the immediate

vicinity, as my companion above the cliffs did not see it at all, though I called to him to watch if it came above.

I then moved my ladder a little closer and went down farther so that my face was about a foot and a half from the egg which the Swift had just left. It was placed on a shelf or crevice in the lower edge of a projection standing out perhaps four or five feet from the main wall and about ninety feet from the breakers below. This crevice was four or five inches high, five or six inches deep, and about twenty inches long, very narrow at one end, and about thirty feet from the top of the cliff, twenty feet of which is earth sloping back to the level land above. This portion of the cliff was wet and dripping constantly, causing tufts of grass to grow here and there, where there was earth enough to support the roots. It was just behind one of these tufts of grass, in a slight depression in the mud, formed no doubt by the bird, that the egg was laid. I did not disturb the egg or nest, not going nearer than a foot and a half, intending to return a week later to get possibly a full set, which I did, but found things just as I had left them a week before and no Swifts were in sight. I took the egg, and peeled off the nest, grass and all, and have it in my collection.

I have since concluded that the set was complete, as when preparing the egg I found that incubation was advanced about two or three days. Another reason for believing that the bird had laid her complement of eggs and was sitting, was the fact of her being so difficult to flush, as all birds sit closer as incubation advances. — A. G. VROOMAN, *Santa Cruz, Cal.*

A Rare Record for Eastern New York. — On August 29, 1901, I took a fine specimen of the Olive-sided Flycatcher (*Contopus borealis*) on Shelter Island, N. Y. It was a female in young-of-the-year plumage, shot from a tall dead tree in a woodland clearing. This bird must have been reared not far from this locality, as it is not likely it had wandered far at this early date. It is the first specimen of the species I ever saw living, and a rare record for Long Island. — W. W. WORTHINGTON, *Shelter Island Heights, N. Y.*

Acanthis linaria rostrata in the Outer Hebrides. — The occurrence of a third example of the so-called Mealy Redpoll in the Island of Barra, one of the Outer Hebrides, led me to request my friend, Mr. W. L. McGillivray — a nephew of the late distinguished ornithologist, and a gentleman much interested in birds — to allow me to examine this and the other specimens of this bird in his possession with a view to ascertaining to what species or subspecies of *Acanthis* the birds obtained in this far western island belonged. I was much interested to find that all three examples were referable to the form described by Dr. Stejneger (Auk, I, p. 153) as *Acanthis linaria rostrata* (Coues) — a bird which has not hitherto been recorded for Great Britain, though several specimens have been obtained on islands off the west coast of Ireland.

The Barra specimens were captured on the 8th of October, 1896, on the 10th of November, 1898, and on the 13th of October, 1900. Their wing measurements range from 3.02 to 3.08 ins. — WM. EAGLE CLARKE, *Museum of Science and Art, Edinburgh*.

The Migratory Movements of the Lapland Longspurs in North America. — The winter migratory movements of the Lapland Longspur (*Calcarius lapponicus*) have been little understood by me, or by those persons whom I have consulted. I have, to satisfy myself, during the past month gathered together all obtainable data for North America, and have been thus able to explain their seemingly erratic movements, and I present the results thinking they may interest others.

The Lapland Longspur (*Calcarius lapponicus*) and the Alaskan Longspur (*C. l. alascensis*) breed in North America approximately north of the 60th parallel from Ungava (Nachvak) to Alaska, the subspecies being confined to the country west of the 120th meridian. They nest during the months of June and July, reaching their breeding grounds in late May. By the last of August (Aug. 20) they begin their southward migration across southern Canada, occurring most abundantly in the central portions of their route (Manitoba). This is true of both their southward and northward journeys. They reach southern Labrador, Manitoba, and British Columbia in September, occurring in these localities apparently only as fall and spring migrants. After entering the United States the ranks of *Calcarius lapponicus* become more crowded into the central States as the eastern and western limits of their migratory route narrow, determined by the Alleghany and Rocky mountains. Stragglers only reach the Atlantic coast south of Ipswich, Massachusetts, and there are no records for the Alaskan Longspur south of Canada on the Pacific coast, the Cascade and Sierra Nevada mountains proving an effectual barrier, as this subspecies is not recorded from California to my knowledge but seems to migrate down between the Rocky and the last named mountains through the Great Basin, and wanders during the winter to Colorado and western Kansas. Along the 47th parallel (Montana, North Dakota, Wisconsin, Minnesota, and Michigan) the Lapland Longspur is a late September and October migrant, while to the south of the 40th parallel it occurs as a winter resident in large numbers as far south as the 37th parallel, occurring even occasionally in northern Texas (Gainsville). The wedge shape of the southern migration between the east and west mountain ranges explains why the Longspurs do not occur regularly all along the southern Pacific coast and on the Atlantic coast south of Massachusetts: a puzzle in the latter case, as formerly viewed from my local standpoint of Massachusetts alone.

The spring northward migration is exactly the reverse of the southward fall movement, the birds reaching the 47th parallel in late March, April and even May, and the 55th parallel in May.

As is the case with all birds during their migrations, stragglers are left along the way either from exhaustion, injury or for less apparent reasons, so that we have winter records for Nova Scotia, Vermont and Wisconsin, due to some of the above causes, and for the same reasons we also have late May records for Longspurs in the southernmost States in which they winter.—REGINALD HEBER HOWE, Jr., *Longwood, Mass.*

The Western Savanna Sparrow in North Carolina.—In looking over the Savanna Sparrows in the collection of the Philadelphia Academy of Natural Sciences, my attention was called to a marked variation from the typical eastern form exhibited by the birds of the Hoopes Collection. This series, consisting of fourteen birds, was taken in the vicinity of Raleigh, North Carolina by H. H. and C. S. Brimley. The difference consists principally in the shorter and more finely pointed bill and in a less degree by the grayer plumage. A comparison established the fact that these specimens were identical with breeding birds of what is probably the western form (*Ammodramus sandwichensis alaudinus*) taken in North Dakota.

The dates of capture of the specimens from North Carolina are as follows:

| | |
|----------------|-----------------|
| Jan. 5, 1883. | April 30, 1890. |
| Jan. 14, 1888. | May 1, 1890. |
| Dec. 29, 1890. | April 17, 1891. |
| Nov. 11, 1891. | April 1, 1892. |
| Oct. 17, 1892. | April 21, 1892. |
| Dec. 20, 1892. | May 1, 1893. |
| Jan. 7, 1893. | May 11, 1893. |

The fact that these records can be arranged in two groups, separated by the months of February and March, suggests that the birds are transients. Again, their numbers and the extended period of time during which they were taken negative the theory that they are stragglers.

These records should be interesting in connection with the observations of Mr. Loomis who has recorded the occurrences of western birds in Chester County, South Carolina.—HERBERT L. COGGINS, *Germantown, Pa.*

The Hooded Warbler in Massachusetts.—On the fifth of this month (September, 1901) I identified an adult male Hooded Warbler (*Wilsonia mitrata*) in a line of old privet bushes in the Harvard Botanical Garden of this city. Although I did not kill the bird, there is no doubt as to its identity, for I was often not more than five feet from it and easily made out every characteristic of the species. I know of no other record of this species for Massachusetts.—ARTHUR C. COMEY, *Cambridge, Mass.*

Nesting of the Carolina Wren (*Thryothorus ludovicianus*) in Southern Massachusetts.—My young friend Mr. Henry S. Forbes has kindly

given me permission to publish the following interesting extracts from two letters which he has lately sent me.

In his first letter, dated at Naushon on July 7, 1901, he says: "This afternoon I had a most exciting bird experience. As I was riding through the Naushon woods I heard a peculiar whistle wholly new to me. I dismounted, tied my horse and followed up the sound. The author I found was a bird of Wren-like appearance and of about the size of a Song Sparrow but shorter and stouter. It had a nervous habit of squatting and jerking its body whenever it gave utterance to its whistled notes. Presently its mate came with food in her bill and I went off to let both birds settle down. As I was watching the male from a distance he suddenly began a most delicious song. A few minutes later I found the nest which contained three or four young nearly ready to fly. It was placed on the ground in a hole among some dry leaves, under the dead branches of a fallen tree, and was partly roofed over with leaves. I did not examine the interior of the nest closely as I did not wish to disturb the young. I thought at the time the birds must be Carolina Wrens and on coming home found that Mr. Chapman's description corresponded in almost every respect with what I had seen and heard. His representation of the song as *whee-udel, whee-udel* seems to me very good indeed."

Under date of August 12, 1901, Mr. Forbes writes again as follows: "Yesterday to my surprise a pair of Carolina Wrens appeared in the garden behind our house and stayed there all day. The male (I suppose sang several times and uttered a variety of queer notes, but the song did not seem to have quite the same ring as when I heard it in the deep woods. I wonder if this is the same pair and if so where the young are. When I revisited the nest a week after I found it, the whole family had left the vicinity. I saw more clearly on this pair, the white or yellowish line above the eye which the young in the nest had."

Mr. Minot's record (Bull. N. O. C., Vol. I, No. 3, Sept., 1876, p. 76) of a pair of Carolina Wrens which he saw in Roxbury about July 4, 1876, and that by Dr. Brewer (*Ibid.*, Vol. III, No. 4, Oct., 1878, p. 193), of a bird taken in Lynn on July 6, 1878, have of course already led us to suspect that the species occasionally breeds in eastern Massachusetts, but Mr. Forbes is, I believe, the first observer who has been fortunate enough to definitely establish the fact. There would seem to be no reason why the birds should not continue to resort to Naushon, for the grand old forest which covers so large a part of that island is admirably suited to their requirements.

—WILLIAM BREWSTER, *Cambridge, Mass.*

Massachusetts Bird Notes.—*Ionornis martinica*.—Another instance of the occurrence of this species in northern Essex County has come to my notice. In June of the present year I saw at the residence of Mrs. Wm. S. Horner of Georgetown a mounted specimen of the Purple Gallinule. Mrs. Horner informs me that the bird was shot by a local gunner in the spring "several years ago" (probably not less than ten years) in a

meadow in Byfield parish, town of Newbury. The locality is not many miles from the pond where the pair of Purple Gallinules was seen in June, 1897, as I have already recorded in 'The Auk' (April, 1901, p. 190).

Dendroica blackburniæ. — The peculiar behaviour, akin to that of many ground-nesting species, of a female Blackburnian Warbler whose nest with three young and an infertile egg I found on June 21 of this year in Lynnfield, a small town near Boston, may be worthy of note. The nest was at the end of a long branch of a hemlock, being 18 feet out from the trunk and 30 feet from the ground. Before any attempt was made to crawl out on the branch, the female, alarmed doubtless by a slight movement of the limb, suddenly tumbled out of the nest and fell, in fluttering, fledgling style, straight down through the foliage to the ground, recovering herself at the last moment before touching the earth and flying up into the underbrush. The helpless way in which she fell led me to believe for a moment that a full-grown young bird had dropped out of the nest. Even when there were young in a nest, I never before noticed such behaviour on the part of a tree warbler nesting at such a height.

Dendroica blackburniæ is a rare but regular breeder in the town of Lynnfield. It also probably breeds in the adjoining well-wooded towns of Middleton and North Reading, as I have observed the species in summer in both places.

The Lynnfield Blackburnian's nest above referred to agrees with a nest of the same species taken in Winchendon, Mass., by Mr. Brewster in resembling "rather closely the nest of the Chipping Sparrow" (Auk, Oct., 1888, p. 392). It is composed of fine hemlock twigs and lined with a few pine needles. It was set firmly in among twigs and was beautifully concealed from view above by a long, full-leaved, horizontal spray, which, arching over within two inches of the structure, made a miniature A-tent for the sitting bird.

Progne subis. — Mr. A. H. Kirkland, late entomologist to the Massachusetts State Board of Agriculture, informs me that while observing the ravages of the fire-worm (*Rhopobota vacciniana* Pack.) in the cranberry bogs of Plymouth and Barnstable counties, he found the Purple Martins feeding freely on the imagos of the pest. The Martins were abundant at many of the bogs, a Martin box on a pole being, according to Mr. Kirkland, "apparently as much a necessary adjunct to a well-regulated bog as a dyke or a cranberry house."

As two broods of the imagos of the fire-worm are on the wing during the summer, and as the female imagos are most active before laying their eggs, the benefits accruing to the cranberry grower from the presence of the Martins are obvious. Mr. Kirkland states that the cranberry growers estimate that in a term of years they lose fifty per cent of their crops because of the damage done by injurious insects, chief among which is the fire-worm.

Colaptes auratus. — The instance of the nesting of the Flicker (*C. auratus*) within a building, as recorded in the Monograph of the Flicker (Wilson

Bulletin, No. 31), reminds me of a somewhat similar case which came to my notice in June, 1897. A barn in Lynnfield, unoccupied and seldom visited, was frequented by Flickers, several holes being made by them in the sides of the building. All the holes that I saw were made where a seam was formed by two boards. A pair of the Flickers nested in the barn laying their eggs on some hay. I did not myself see the eggs in position but the facts in the case were later furnished me by Mr. J. W. Ross, the owner of the property.

A pile of hay some five or six feet high occupied one corner of the barn. The Flicker laid her eight eggs on this hay pile, making a slight depression. The eggs were laid close to the side of the barn and about one foot below the hole made therein by the birds.

Mr. Ross visited his barn at infrequent intervals and thinks that this will explain why the Flickers nested therein. On the occasion of one visit in May the bird flew from her eggs on the hay and made her escape through one of the holes. Two of the eight eggs were taken by boys, but the others hatched and Mr. Ross believes that the young were safely reared. This instance of the Flicker nesting within a building differs from that recorded in the 'Wilson Bulletin' in that the Massachusetts bird utilized hay for a nesting-place while in the other case the eggs were laid on boarding. — J. A. FARLEY, *Malden, Mass.*

Maine Bird Notes. — The Swallow Roost, of which I gave an account some years ago (Auk, Jan., 1895, p. 48) has moved to another location within two or three years.

I think the first impulse to change was given by the felling of most of the willows which they were wont to frequent. From time to time trees had been cleared away, but this cutting was on more wholesale lines and not to the Swallows' liking. There was, however, sufficient small willow growth farther back on the point for roosting, but they did not take to it, and though the banks are again thick with new growth they have not returned.

The next summer after the cutting of the trees they would collect, yet in smaller and smaller numbers, and go through some of their evolutions, either in memory of old times or from force of habit, and then depart half a mile southeast to the Kennebec River. I have been told by people living close by, that there had been for some time a smaller roost on an island in the Kennebec, seven or eight hundred feet long and covered by a thicket of willows with an occasional elm tree. It was to this roost that the Messalonskee Swallows joined themselves. Here are performed by a countless host similar interesting manœuvres to those before described and by the same kinds of *Hirundinidæ*.

I have never seen any suggestion of Martins (*Progne subis*) being night birds, but a few years ago, about ten o'clock of a bright moonlight night in August — my note-book says August 8 — I was resting in a hammock outdoors, when I heard the calls of Martins. A few minutes later my husband coming up the walk said, "Did you hear that?"

"Hear what?" I asked evasively.

"Well, I heard Martins if I ever heard them!" he replied, "and, moreover, I saw them. I looked up quickly and there were some flying across the face of the moon."

June 15, 1900, Mr. Bates, walking home from a train that reached Waterville between two and three in the morning, without having a thought of Swallows, suddenly heard them in the air above. Again it was bright moonlight.

In a flock of fifteen or twenty Robins (*Merula migratoria*) that has been about our neighborhood for the last few weeks is a handsome albino. The upper parts, except the breast, are entirely white, allowing for a tinge suggestive of not being quite clean; but the tail shows some dark feathers underneath. The breast is lighter than usual, a flesh color on the sides with a deeper shade through the center, and the bill seems very yellow in contrast to the white plumage. It is both surprising and amusing to see it run along and hop, hop, hop as every Robin does while seeking his food on the ground and to mark the twitch of tail and alarm note of *tut, tut!* as it flies up to a near by tree.

While at the island of Southport, on the Maine coast, this summer from July 20 to August 17, we heard the White-winged Cross-bills (*Loxia leucoptera*) singing in a manner to which the bird books we have so far consulted do not give due credit. The song of one on the west side from the top of a spruce tree excited our admiration, but at the cape where coniferous trees abound, the chorus from a number made us think of a bird store let loose. The song seemed much richer, louder and more prolonged than that of the Goldfinch, — more like a Canary's outpour with all the calls, trills, warbles and choppings. It was given on the wing as well as from the tree-tops, and the birds were very tame, alighting on the ground near us. We heard the bird also from the steamer singing at Christmas Cove and at Pemaquid. A number of bird lovers were agreed in calling it a rarely beautiful song, and that the bird should be placed high up in the list of sweet singers. — ABBY F. C. BATES, *Waterville, Maine.*

Ontario Notes. — Some time ago Gulls were said to breed regularly on the islands in Lake Ontario, but for fifteen or twenty years they have deserted even such isolated spots as Pigeon Island, and it is doubtful if they breed at any point about the lake or its islands. They were said to breed commonly on islands in many of the inland lakes of the Province of Ontario, and Gull Lakes are to be found everywhere, with a tradition that gulls bred there in the past. One of the best known of these Gull Lakes is in Clarendon township, about eighty miles north of Kingston. It was said to have an island called Gull Rock on which some hundreds of birds bred. The Rev. C. J. Young and I determined to investigate the truth of this statement, and on May 30, 1901, succeeded in reaching the lake after a very rough and unpleasant trip, and discovered that Gull Rock may have furnished a foothold for one or two pairs of gulls many years ago, but no

authentic record of gulls breeding at this spot during a period of twenty or twenty-five years existed. The rock is nothing but a granite boulder some ten or twelve feet across, and Gull Lake is remarkable chiefly for the absence of gulls. In a lonely little pond called Pine Lake we found two pairs of Herring Gulls (*Larus argentatus*) breeding on small rocks (May 31). Their nests were carefully constructed of dried moss and grass, and in addition one had several pine cones imbedded in its walls.

The first nest found was about two feet and a half from the water, and was placed in a hollow in the rock. It contained three eggs almost hatched. The second nest was almost on a level with the water, and contained but one egg, quite fresh. The birds were much annoyed at our intrusion and perched on pine trees while we were photographing the nest and examining the surroundings. The fact that the egg in the second nest was fresh led us to suppose that a tragedy had overtaken the first nest, as a violent gale would certainly cause the sea to sweep the rock on which the birds had established themselves. It is more than probable that the Herring Gulls breed on the islands in many of the lonely northern lakes of Ontario.

In a former issue of 'The Auk' I reported the Green Heron (*Butorides virescens*) as breeding on the shores of Charleston Lake; this year I have found it breeding in a bay on Loughboro Lake, twenty miles north of Kingston, and from reports given have not the slightest doubt that it will be found at various points along the so-called Rideau Canal. — C. K. CLARKE, M. D., Kingston, Ontario.

Additional Notes on the Birds of Okanogan (Chelan) County, Washington. — Okanogan County as constituted at the time of the publication of the 'Preliminary List' (Auk, April, 1897, pp. 168-182) has since been divided, the northern portion retaining the name. The southern half, Chelan County, embraces the region south of the Methow divide and also the Wenatshee valley which used to belong to Kittitas County.

This change effects only a few species given in the list of 1897. The rest were recorded in what is now Chelan County. The exceptions are, *Habia melanocephala*, *Setophaga ruticilla*, and *Troglodytes ædon aztecus*.

During the summer of 1900, Prof. Lynds Jones of Oberlin, O., and myself visited Chelan County. We spent a couple of days at the foot of Lake Chelan, and were intending to put in at least four weeks in the high mountains west of the lake, paying special attention to the mountain avifauna. A disastrous camp-fire which occurred during the first week of our stay obliged us, however, to abandon our plans and to make a rather hurried exit. Our list of additions to the Chelan County records is therefore quite meagre and still to be accounted 'preliminary.'

The following new species were recorded:

Tringa bairdii. BAIRD'S SANDPIPER. — A single individual was seen feeding on the shore and floating ice blocks of the glacier lake on Wright's Peak. A similar bird was seen in the same situation in August, 1895; but not thoroughly identified as this one was.

Accipiter atricapillus striatulus. WESTERN GOSHAWK. — One specimen taken in the Stehekin valley.

Falco richardsonii. RICHARDSON'S MERLIN. — First noted on the Chelan River ; was afterwards twice seen in the mountains.

Stellula calliope. CALLIOPE HUMMINGBIRD. — A few were made out with indifferent success. They are not to be counted as nearly so common as the Rufous.

Loxia leucoptera. WHITE-WINGED CROSSBILL. — A flock of a dozen was seen at an altitude of 7000 feet on Wright's Peak.

Stelgidopteryx serripennis. ROUGH-WINGED SWALLOW. — Several individuals were distinguished from the abundant Bank Swallows at the foot of Lake Chelan. This bird can hardly be rare, and its omission before was doubtless due to oversight.

Certhia familiaris occidentalis. CALIFORNIA CREEPER. — Not uncommon in the high mountains. No specimens were taken but there is little doubt that the birds are an overflow from the Pacific slope ; since they were continuously present from the high regions east of the divide as we moved west over the range and down into the lowland forests of the Puget Sound country.

Parus rufescens. CHESTNUT-BACKED CHICKADEE. — The appearance of this bird is also to be counted an overflow of a typical coast form. A single troop was seen and a specimen obtained in the valley of the Stehekin.

Besides these eight new records two species are to be transferred from the 'hypothetical list' of 1897.

Larus philadelphia. BONAPARTE'S GULL. — Seen on the Columbia near Wenatchee.

Helminthophila rubricapilla gutturalis. CALAVERAS WARBLER. — Repeatedly seen. A set of three fresh eggs was taken from a brushy draw well up in the mountains, on July 22. — Rev. W. LEON DAWSON, *Columbus, O.*

Manuscript of Emmons's Catalogue of Massachusetts Birds. — Through the generosity of Miss M. R. Audubon, I have recently come into the possession of the original manuscript of Dr. Ebenezer Emmons's Catalogue of the Birds of Massachusetts. This will be of more particular interest to the ornithologists of New England, as it was the first attempt at a scientific list of Massachusetts Birds.

In Dr. J. A. Allen's 'List of the Birds of Massachusetts, with Annotations'¹ he says : "The first and formal list of the birds of the state was prepared by Dr. Ebenezer Emmons, and published in 1833 in Prof. Hitchcock's 'Report on the Geology, Mineralogy, Botany and Zoology of Massachusetts' (pp. 545-551). This contained one hundred and sixty species, all but two of which were valid. Excluding the two synonyms, all but

¹ Bulletin of the Essex Institute, Vol. X, p. 3, 1878.

one (*Rhynchops nigra*) have since been confirmed as inhabitants of the state. This list was only very sparingly annotated, but symbols were employed to indicate whether the species were rare or common, resident or migratory, or whether known to breed in the state. This list, so far as it goes, is remarkably free from errors."

The manuscript is written by Dr. Emmons in ink, in a small and cramped hand, and covers seven pages of foolscap, and on comparing it carefully with the list as it appears in Hitchcock's Report, I find it is practically an exact transcript. The two footnotes in the Report, referring to the Red-bellied Woodpecker—"Takes the place of the *P. auratus* in the western part of the State of New York"—and the Wild Turkey, "Frequently met with on Mount Holyoke. E. H."; do not, however, appear in the manuscript. On the back of the list, at the head of the eighth page, Dr. Emmons has written the following letter to Prof. Hitchcock, submitting the list to him.

"Sir.—I have done the best I can with the Catalogue. It is much more satisfactory to myself in the 1st Sub-Class. In the 2d I have been obliged to obtain my information mostly in Museums, &c. But in general it is, I think, accurate. I might have added a few more species, but I choose rather to omit some than commit the opposite error. You see my form and arrangement, it is, of course, at your disposal to alter as you see fit to make it conform to your general plan. The systematic form I should certainly prefer to an alphabetic one. My observations you are at liberty to suppress. Errors you will, of course, be good enough to rectify &c. The English names I would print in italic.

Yours truly

E. EMMONS.

On the bottom of the same page is the following letter addressed to John J. Audubon from Prof. Hitchcock:

"Amherst, Mass. March 22d, 1833.

MR. AUDUBON—*Dear Sir*—I send you Dr. Emmons' Catalogue of our birds, to which, as I hear from G. A. Greene, Esq., you have generously consented to add some notes. When you have prepared them will you be so good as to leave them, along with this Catalogue, with John Tappen Esq. No. 74 State St., Boston, and greatly oblige

Yours respectfully and obediently,

EDWARD HITCHCOCK."

The whole list, including the letters, was then folded and sealed, without envelope, and addressed to "John J. Audubon, Care of Dr. George Parkman, Boston, Mass."

I wrote to Prof. Chas. H. Hitchcock of Hanover, N. H., son of the late Edward Hitchcock, asking if he knew who the gentlemen mentioned in his father's letter to Audubon were. In his reply of Dec. 17, 1900, he writes,

"John Tappen was one of the solid men of Boston, a philanthropist, greatly interested in anti-slavery and church extension, next door neighbor and friend of Edward Everett and my father's particular friend. Of Mr. Greene I have no especial knowledge. His name occurs in connection with the forwarding of scientific work."

There is nothing in the Emmons list to show that Audubon added any notes to it. — RUTHVEN DEANE, *Chicago, Ill.*

RECENT LITERATURE.

Pycraft on the Morphology of the Cassowaries and their Allies.¹ — In this important paper, which appears as the second part of Rothschild's 'Monograph of the Genus *Casuarius*,' Mr. Pycraft has endeavored to ascertain, so far as possible, the relations of the *Casuariidæ* to the remaining 'Struthious' forms and the position of these with regard to the *Carinatae*. We entirely agree with the author that the attempt has not been fruitless, and we heartily second Mr. Pycraft's thanks to Mr. Rothschild for entrusting the work to his hands.

The bulk of the paper is devoted to a description of the pterylosis and anatomical characters of the various forms under consideration, presented in Mr. Pycraft's usual clear and concise style. The repetition of the detailed descriptions of anatomical characters that have been given by other writers has been purposely and advantageously omitted, but a list of these papers is appended; while practically all the information is given that one would be likely to use. Moreover there is a carefully prepared key to the osteology of the *Palæognathæ*, based on the characters afforded by the adult skeleton, in which are set forth the distinctive characters of the existing genera and species of Struthious birds and *Apteryges* as shown by the skull, vertebral column and limbs. The *Dinornithidæ*, *Æpyornithidæ* and *Crypturi* are diagnosed as to family characters only.

The gist of the paper is to be found in the introductory remarks and final discussion of the phylogeny of the *Palæognathæ*. In the union of the *Tinamous* and 'Ratitæ,' which the author regards as a real need, he is in accord with Gill, and with Stejneger and other American ornithologists who have long held that while the division of birds into *Ratitæ* and *Carinatae* might be convenient it was not founded on a good morphological

¹On the Morphology and Phylogeny of the *Palæognathæ* (*Ratitæ* and *Crypturi*) and *Neognathæ* (*Carinatae*). By W. P. Pycraft. Trans. Zool. Soc., London, Vol. XV, Part V, No. 6, pp. 149-290, pll. xlii-xliv, December, 1900.

basis. Abroad, the effect of conservatism has been such, that, aside from Garrod and Fürbringer, Merrem's divisions, which had the sanction of adoption by Huxley, have been almost universally retained, and even Gadow in his Classification of the Vertebrata keeps the Tinamous in an order next the fowls. We are therefore glad to see these birds placed by Mr. Pycraft where we believe them to belong and where a strict osteological diagnosis puts them.

Mr. Pycraft uses the antithetical terms Palæognathæ and Neognathæ to designate the two main groups into which he divides existing birds, the former comprising the 'Ratite' birds and Tinamous, the latter including all other birds.

The Neognathous type of palate is considered to have been derived from the Palæognathous, the Tinamous presenting a stage somewhat intermediate between the two, and the palate of *Rhea* indicating how the change may have been brought about; furthermore the ægithognathous and schizognathous types of skull are but modifications of the dromæognathous, and the desmognathous a secondary modification of the schizognathous. This last may, we think, be accepted without question, but the former statement should at present be received with a little caution owing to our exceedingly imperfect knowledge of early birds. It may not be amiss here to say that the skull of *Hesperornis*, as shown by a specimen in the University of Kansas, was devoid of basipterygoid processes and that the arrangement of the bones of the palate appears to have been very peculiar.

The palæognathæ are regarded as polyphyletic probably tri-phyletic, while the neognathæ have been derived as a diverging branch from that stock which gave rise to *Rhea*, *Dinornis* and *Aepyornis*. *Dromæus* is the most primitive of living birds, with *Casuarinus* not far distant, while *Struthio* is perhaps derived from the same ancestral stock as these two and is not far removed. *Apteryx* is looked upon as quite distinct from the others, and *Rhea* as the most highly specialized of the large forms.

Such are some of the conclusions reached by Mr. Pycraft, and we are promised a discussion of the phylogeny of the Neognathæ later.—F. A. L.

Bangs on New American Birds.—During the last few months Mr. Outram Bangs has described a number of new American birds additional to those recently characterized by him in 'The Auk.' These include a new Honey Creeper from San Miguel Island, Panama,¹ which he has named *Cæreba cerinoclunis*; a new *Phaethornis* (*P. longirostris susurrans*) from the Santa Marta region of Colombia²; a new *Ortalis* (*O. struthopus*) from San Miguel Island, Bay of Panama³; and a new form of the Red-

¹ Proc. New Engl. Zoölogical Club, II, pp. 51, 52. Feb. 8, 1901.

² *Ibid.*, pp. 63-65. July 31, 1901.

³ *Ibid.*, pp. 61, 62. July 31, 1901.

tailed Hawk (*Buteo borealis umbrinus*) from Florida,¹ based on a single specimen collected at Myakka, Manatee County. He thinks it may be only a straggler to Florida from Cuba. Mr. Bangs has also described a new subspecies of *Stelgidopteryx* (*S. ruficollis æqualis*) from Santa Marta, Colombia,² and passed in review the other members of the *ruficollis* group, namely, *S. uropygialis* Lawr., and *S. fulvipennis* (Scl.), which he looks upon as merely subspecies of *S. ruficollis*.

In conjunction with Mr. Brewster, he has also distinguished a new form of *Aithurus* from Jamaica,³ which these authors have named *Aithurus scitulus*, distinguished from *A. polytmus* by smaller size, darker colors, and a much shorter, wholly black bill. — J. A. A.

Bangs on Birds from the Liu Kiu Islands.⁴ — A collection of 107 specimens recently received by the Museum of Comparative Zoölogy, was found to comprise 56 forms, of which six are described by Mr. Bangs as new. The paper forms an important addition to our knowledge of the ornithology of these little known islands. — J. A. A.

Chapman on New Birds from Peru.⁵ — A small collection of birds made by Mr. H. H. Keays, for the American Museum of Natural History, at Inca Mines, southeastern Peru, proved of exceptional interest, containing, besides several rare species, six forms that Mr. Chapman has characterized as new. These are *Chlorochrysa fulgentissima*, *Malacothraupis castaneiceps*, *Euphonia xanthogastra brunneifrons*, *Chlorospingus flavigularis parvirostris*, *Ochthæca keaysi*, and *Terenura xanthonota*. — J. A. A.

Grinnell on New California Birds. — In recent numbers of 'The Condor' Mr. Joseph Grinnell continues to distinguish local forms among the birds of California, characterizing in the May-June issue (pp. 65, 66), two new forms of the Yellow-throat, under the names of *Geothlypis trichas scirpicola* and *G. t. sinuosa*, the former being a "permanent resident" of the fresh-water tulé beds of Los Angeles County and the latter a "permanent resident" of the salt marshes about San Francisco Bay. *G. t. sinuosa* is thus a further refinement of *G. t. arizela* Oberh., which Mr. Grinnell allows a wide range on the Pacific slope in the breeding season, — from "Central California to British Columbia."

¹ *Ibid.*, pp. 67-69. July 31, 1901.

² *Ibid.*, pp. 57-60. July 31, 1901.

³ *Ibid.*, pp. 47-50. Feb. 8, 1901.

⁴ On a Collection of Birds from the Liu Kiu Islands. By Outram Bangs. Bull. Mus. Comp. Zoöl., XXXVI, No. 8, pp. 255-269. July, 1901.

⁵ Descriptions of Six apparently New Birds from Peru. By Frank M. Chapman. Bull. Am. Mus. Nat. Hist., XVI, pp. 225-228. Sept. 12, 1901.

In the July-August issue of 'The Condor' (pp. 92, 93) he describes a new Song Sparrow as *Melospiza melodia sanctæcrucis*, with the range: "Along the fresh-water streams heading in the Santa Cruz Mountain region, from San Francisco south to Monterey Bay." He comments at some length on the intricacies of the Song Sparrow problem in California, which he rightly considers is as yet far from settled.—J. A. A.

Babson's Birds of Princeton, New Jersey.¹—The area embraced in the present list is included within "an eight mile radius" of Princeton, and comprises the greater part of Mercer County and the southern portions of Middlesex and Somerset Counties. The introduction defines the boundaries of the region, describes its physical characteristics, and summarizes its principal ornithological features, including a classification of the species in accordance with the nature of their occurrence, they being grouped into the following eight categories: Permanent Residents, Summer Residents, Summer Visitants, Winter Residents, Winter Visitants, Regular Transients, Irregular Transients, and Accidental Visitors. There is in addition a list of the species found breeding, with the earliest dates at which nests containing eggs have been found.

This is followed by the 'Annotated List of Birds,' numbering 230 species. The arrangement and nomenclature is that of the A. O. U. Check-List. The annotations are satisfactorily full and explicit, the list having been evidently compiled with great care and discrimination. The list is based primarily on the author's own observations, which cover four years, but indebtedness is acknowledged to Dr. Marcus Stultz Farr, Dr. Alexander Hamilton Phillips, and Mr. W. E. D. Scott, all of Princeton University, and to whom frequent reference is made in the annotations. The list is exceptionally free from typographical errors, and is tastefully printed, and forms in every way a most creditable initial number of the 'Bulletin' of a 'Bird Club' from which much good work may be confidently expected.—J. A. A.

Selous's 'Bird Watching'²—As the author explains, this work, "with one or two insignificant exceptions," is a record of his own observations; "all that I have seen which I have included in this volume," he says, "was noted down by me either just after it had taken place or whilst it actually was taking place," much of it being transcripts from his note-books.

¹ The Birds of Princeton, New Jersey, and Vicinity. By William Arthur Babson, B. S., Princeton University. Bulletin of the Bird Club of Princeton University, Vol. I, No. 1, pp. 7-82, Sept., 1901.

² Bird Watching | By | Edmund Selous | [Vignette] London | J. M. Dent & Co., Aldine House | 29 & 30 Bedford Street, W. C. | 1901—8vo, pp. xii + 347, 6 photogravure pl. and several text cuts. Price. \$3.00. (Macmillan Company, 66 Fifth Ave., New York.)

And for this reason, he says, he has called his book 'Bird Watching.' In a certain sense it is unique, and forms a most valuable record of patient and minute observations of wild British birds in a state of nature. The scope of the work may be indicated by the following transcript of the headings of the twelve chapters: I, Watching Great Plovers, etc.; II, Watching Ringed Plovers, Redshanks, Pewits, etc.; III, Watching Stock-Doves, Wood-Pigeons, Snipe, etc.; IV, Watching Wheatears, Dabchicks, Oyster-catchers, etc.; V, Watching Gulls and Skuas; VI, Watching Ravens, Curlews, Eider-Ducks, etc.; VII, Watching Shags and Guillemots; VIII, Watching Birds at a Straw-stack; IX, Watching Birds in the Greenwoods; X and XI, Watching Rooks; XII, Watching Blackbirds, Nightingales, Sand-Martins, etc.

The amount of original and interesting information here brought together renders the book noteworthy and important, but it is perhaps marred a little, and certainly greatly swelled in volume, by the author's propensity to theorize and philosophize on what he has seen, especially where the observations do not furnish proper basis for speculative digressions.

In the first place the author is a strong believer in the efficacy of 'sexual selection,' and it is consequently from this point of view that he interprets the behavior of the birds he has so carefully watched. His arguments, he seems himself willing to admit, are here and there a little far-fetched and inconclusive, and to this extent they had better have been wholly omitted from an otherwise excellent book. Lack of space forbids a detailed reference to particular instances, and also prevents the transcription here of many passages in illustration of the author's admirable descriptions of what he has seen amid the wild crags of the sea-coast, on the moorlands, or in the 'greenwoods.' His felicity of description often makes readable, and even gives special interest, to what might easily become a dull recital if rendered by a less gifted narrator. But in general, to the bird lover, the incidents possess in themselves an interest that gives a charm to the pages of 'Bird Watching.'

The photogravure and text illustrations are from drawings by the well-known bird artist J. Smit, and, having been doubtless made under the author's careful supervision, are probably as good substitutes for the truthful pictures of the camera as could be well devised.

A very full index renders the contents of the book readily available.

'Bird Watching,' it may be added, forms a volume of the 'Haddon Hall Library' series, edited by the Marquess of Granby and Mr. George A. B. Dewar. — J. A. A.

Publications Received. — **Bangs, Outram.** (1) On a Collection of Birds from the Liu Kiu Islands. (Bull. Mus. Comp. Zool., XXXVI, No. 8, July, 1901.) (2) A New Honey Creeper from San Miguel Island, Panama. (Proc. N. Engl. Zool. Club, II, pp. 51-52, Feb. 8, 1901.) (3) Notes on the American Rough-winged Swallows, with Description of a new Sub-

species. (*Ibid.*, pp. 57-60, July, 1901.) (4) A New *Ortalis* from the Archipelago de las Perlas, Bay of Panama. (*Ibid.*, pp. 61, 62, July 31, 1901.) (5) A New *Phaethornis* from the Santa Marta Region of Colombia. (*Ibid.*, pp. 63-65, July 31, 1901.) (6) On an apparently Unnamed Race of *Buteo borealis*. (*Ibid.*, pp. 67-69.)

Bocage, J. V. Barboza du. Aves da Guiné Portuguesa. (Jorn. de Sci. Math., Phys. e Nat., (2) VI, No. 6, Maio, 1901.)

Bonhote, J. L. On the Birds collected during the Skeat Expedition to the Malay Peninsula, 1899-1900. (Proc. Zool. Soc. Lond., 1901, pp. 57-81.)

Brewster, William, and Bangs, Outram. On an overlooked species of *Aithya*. (Proc. N. Engl. Zool. Soc., II, pp. 47-50, Feb. 8, 1901.)

Chapman, Frank M. Descriptions of Six apparently New Birds from Peru. (Bull. Am. Mus. Nat. Hist., XIV, pp. 225-228. Sept. 12, 1901.)

Dubois, Alphonse. Synopsis Avium, fasc. 5 and 6, 1900.

Finsch, O. Systematische Uebersicht der Vögel der Südwest-Inseln. (Notes from the Leyden Mus., XXII, pp. 225-301, pll. iii-v, 1901.)

Grinnell, Joseph. (1) The Pacific Coast Yellow-throats. (Condor, III, No. 3, pp. 65, 66, May 15, 1901.) (2) The Santa Cruz Song Sparrow with notes on the Salt Marsh Song Sparrow. (*Ibid.*, No. 4, pp. 90, 93, July 15, 1901.)

Herman, Otto. A Madarak Hasznáról es Káráról. Budapest, 1901. 8vo, pp. 280, numerous half-tone plates.

Meyer, A. B., and Heller, K. M. Aepyornis Eier. (Abhandl. u. Berichte d. Königl. Zool.-und Anthrop.-Ethn. Mus. zu Dresden, IX, No. 7, 1901, pp. 8, pll. 2.)

Meyer, Adolph F. A Field Key to our Common Birds. . . found in Eastern Wisconsin. Milwaukee, 1901, pp. 22. Price, 10 cents.

Salvadori, Tommaso. Intorno ad alcuni Uccelli delle Spitzberghe. (Boll. dei Mus. di Zool. ed Anat. comp. della R. Università di Torino, XVI, 1901.)

Selous, Edmund. Bird Watching. London, J. M. Dent & Co., and New York, the Macmillan Company. 8vo. pp. xii + 347, illustrated. Price, \$3.00.

Shelley, G. E. On some Collections of Birds from the Protectorate of British Central Africa, received in 1899 and 1900. With an Introduction by P. L. Sclater. (Ibis, April, 1901, pp. 161-177.)

Shufeldt, R. W. The Osteology of the Cuckoos (Coccyges). (Proc. Amer. Philos. Soc., XL, No. 165, 1901, pp. 4-51, pll. i and ii.) (2) Osteology of the Penguins. (Journ. Anat. and Phys., XXV, April, 1901, pp. 390-404, pl. xxxviii.) (3) Notes on the Osteology of *Scopus umbretta* and *Baleniceps rex*. (*Ibid.*, pp. 405-414, pl. xxxix.) (4) On the Osteology of the Pigeons (Columbæ). (Journ. of Morph., XVII, No. 3, 1901, pp. 487-512, pll. A and B.) (5) On the Osteology and Systematic Position of the Screamers (*Palamedea*, *Chauna*). (Am. Nat., June, 1901, pp. 455-461.) (6) On the Osteology and Systematic Position of the Alcæ. (*Ibid.*, July,

- 1901, pp. 541-551, with 1 plate.) (7) Applied Photography. Application No. 21.—To Oölogy. (The Photogram, June, 1901, pp. 154, 156.) (8) British and American Jays. (Pop. Sci. News, July, 1901, pp. 148-150.)
- Anales del Museo Nac. de Montevideo*, IV, entr. xix, 1901.
- Annals*, The, of Scottish Nat. Hist., No. 39, July, 1901.
- Australian Museum*, Report of, for 1899.
- Bird-Lore*, III, No. 4, July-August, 1901.
- Birds and Nature*, X, Nos. 1, 2, June, Sept., 1901.
- Bulletin of the Bird Club of Princeton University*, I, No. 1, Sept., 1901.
- Bulletin of the British Orn. Club*, XI, Nos. lxxx and lxxxi, May and June, 1901.
- Condor*, The, III, Nos. 4 and 5, July-August, and Sept.-Oct., 1901.
- Forest and Stream*, LVI, Nos. 25, 26, LVII, Nos. 1-12, 1901.
- Journal*, The, of the Maine Orn. Soc., III, No. 3, July, 1901.
- Knowledge*, XXVI, Nos. 188-191, June-Sept., 1901.
- Notes on Rhode Island Ornithology*, II, No. 3, July, 1901.
- Naturalist*, The, A Month. Journ. of Nat. Hist. for North of England, Nos. 534-536, July-Sept., 1901.
- Ornithologische Monatsberichte*, IX, Nos. 7-9, July-Sept., 1901.
- Ornithologische Monatsschrift*, XXVI, Nos. 5-8, May-August, 1901.
- Ornithologisches Jahrbuch*, XII, Heft 2-5, March-Oct., 1901.
- Osprey*, The, V, Nos. 5-7, May-July, 1901.
- Ottawa Naturalist*, The, XV, Nos. 3-5, June and July, 1901.
- Our Animal Friends*, XXVIII, Nos. 11, 12, XXIX, No. 1, July-Sept., 1901.
- Proceedings of the California Acad. Sci.*, (3) Zoöl., II, Nos. 7-10, III, No. 1, 1901.
- Science*, N. S., XIII, Nos. 338, 339, XIII, Nos. 340-351, 1901.
- Transactions of the Nat. Hist. Soc. Glasgow*, VI, pt. 1, 1899-1900.
- Wilson Bulletin*, N. S., VIII, Nos. 2 and 3, May and August, 1901.
- Yearbook of the U. S. Depart. Agric. for 1900.*
- Zoölogist*, The, (4), V, Nos. 54-56, June-August, 1901.

CORRESPONDENCE.

Early Migration of Wild Geese.

EDITORS OF 'THE AUK':—

Dear Sirs:—Upon the 30th day of August, when in longitude 54° E. and latitude 45° N. (approximately), upon S. S. 'Minneapolis' bound from London to New York, I saw and pointed out to several of my fellow-passengers, three flocks of Geese flying due south, as near as could be

judged from the angle at which we saw them. They were very large flocks, and were unfortunately too distant to make their identity sure. That they were of the goose tribe was shown by their manner of flying, the V-formation being very perfect, and, as the flocks had upwards of a hundred in each, the long lines were not always perfectly steady, but waved slowly up and down like a blade of kelp in deep water. They may have been brant, or they may have been any one of the greater ducks, but they certainly were not gulls of any sort, and my belief is they were Canada Geese. I am very familiar with the flight of geese, and these flocks had all of the characteristics I have been accustomed to attribute to this regular migrant.

My question is, where were they bound at such an early date? They were heading into an open sea, and unless they changed their course, I do not believe they would have even sighted the Azores Islands. They may have been following some favorite great circle, or an upper air current not recognizable from the sea level.

The question was further brought home to me this morning (Sept. 17) by seeing from my window at half past seven o'clock, at Peace Dale, R. I., eight Wild Geese, near enough to be sure of, also flying south in an irregular manner, as if they had begun their fall migration. The date strikes me as being very early, and the suggestion of an early winter is undoubtedly conveyed to those wise in weather signs.

I should be glad if you could inquire through the columns of 'The Auk' for other notes of the southward flight of geese this year, and especially if anyone can suggest the probable destination of the flocks seen at sea.

ROWLAND G. HAZARD,
Peace Dale, R. I.

NOTES AND NEWS.

THE NINETEENTH ANNUAL CONGRESS of the American Ornithologists' Union will be held at the American Museum of Natural History, New York City, beginning on the evening of Monday, November 11, 1901. The evening session will be for the election of officers and members and for the transaction of the usual routine business. Final action will also be taken on the proposed amendments to the By-Laws, relating to the classes of membership, as approved at the last meeting of the Union (see Auk, Jan., 1901, p. 128). Tuesday and the following days, the sessions will be for the presentation and discussion of scientific papers, and will be open to the public. Members intending to present communications are requested to forward the titles of their papers to the Secretary, Mr. John H. Sage, Portland, Conn., so as to reach him not later than November 8.

In connection with the A. O. U. Congress there will be a conference of representatives of the Audubon Societies, for the purpose of forming plans for more effective coöperation.

NEWTON DEXTER, for a time an Associate Member of the American Ornithologists' Union, died suddenly of apoplexy, at Seaconnet Point, near Providence, R. I., July 27, 1901. His father was Samuel Dexter, of the eminent Rhode Island family of that name, and his mother was the daughter of James Fenner, a former governor of Rhode Island. He was educated at the Lyons Grammar School of Providence, where he prepared for Brown University, but gave up his college course for a period of foreign travel. He early displayed great interest in natural history pursuits, and especially in ornithology. He was an ardent sportsman-naturalist, and although he acquired an excellent knowledge of birds, and collected extensively, he published very little. In 1865 he was one of the volunteer assistants who accompanied the elder Agassiz on his well-known expedition to Brazil, and a large part of the extensive collection of birds obtained on this expedition was due to the industry and enthusiasm of Mr. Dexter. Later he traveled extensively in the Far West, while it was still an 'Indian country,' and during recent years he usually spent his winters in Florida, hunting and fishing, and collecting more or less incidentally. He was very modest and unassuming, avoiding publicity, and pursued his natural history investigations for the pleasure he took in them, publishing very few of the results. He presented from time to time many rare birds to various natural history museums, and was especially interested in the Roger Williams Park Museum of Providence. An intimate friend of his writes of him: "He was a staunch friend, genial and liberal in disposition, and careful to disguise his many kind acts."

FRANCIS J. BIRTWELL, an Associate Member of the American Ornithologists' Union, died at Willis, N. M., June 28, 1901. Mr. Birtwell was spending the summer at this quiet mountain resort in the Pecos River forest reserve that he might complete his book, 'The Ornithology of New Mexico,' and record a series of careful investigations on the influence of food and environment on the plumages of birds.

It was in an attempt to secure a valuable nest some 65 feet from the ground that the young scientist lost his life.

Mr. Birtwell was born in London, Eng., in September, 1880, and came to this country at an early age. From the Boston high schools he entered Bussey Institute, and from here had arranged to become a student in the Lawrence Scientific School, Harvard University; but, while studying, in the summer of 1899, in the Brooklyn Biological Laboratory, he found he was the victim of tuberculosis, and went to New Mexico. He was in the Territorial University for the next two years. Next year he was to have taken a degree at the Territorial College of Agriculture, where they "needed a man of his earnest ability." 'The Ornithology of New Mexico' had been accepted as a thesis for graduation.

During his brief life, Mr. Birtwell had been an industrious ornithologist. From his earliest youth he evinced a remarkable interest in the study of birds, which attracted the attention of local ornithologists. He was an active member of the Nuttall Ornithological Club. He founded the Elliott Coues chapter of the Agassiz Society of Jamaica Plain, of which he was president until leaving for the west. He was the founder and first president of the Roxbury High School branch of the Agassiz Association, was a charter member of the American Bird Restorers' Association, and, for two years, kept the records of bird migration for his section for the Department of Agriculture at Washington. Through the friendship of Dr. Coues, he became a member of the A. O. U. He was a contributor to 'The Auk,' 'The Osprey,' 'The Nidologist,' 'Science,' 'Popular Science,' the Boston 'Transcript,' and the Dorchester 'Beacon.'

The Dorchester 'Beacon' speaks of him as "an exceptionally brilliant young man, — a man possessed of a deep and thorough knowledge of the flora and fauna of his country, and a finished, graceful and interesting writer. . . . His contributions throbbed with love of Nature in her every form. His latest and, alas that we must say, his last contribution to the 'Beacon,' dated Albuquerque, Jan. 15, was reminiscent of the old Back Street woods and a plea for the salvation of the few remaining fields and woods of Dorchester." Dr. Coues wrote of an article young Birtwell had submitted to him that he knew of no other boy of his age who could have written so ably, and he predicted for him a great future.

At the time of the crusade against the House Sparrow in Mayor Quincy's administration in Boston, young Birtwell was the principal speaker in denunciation of the bird.

In May last, Mr. Birtwell was married to Miss Olivia Morton, a native of Iowa.

The peculiar conditions affecting faunal life in New Mexico were of especial interest to Mr. Birtwell. Though he had, in his few years, accomplished much, "his keen powers of observation, his independence of thought," and "his tireless zeal" made him "a young man whose career promised to be of great service to ornithology." — O. M. B.

AN AUSTRALASIAN ORNITHOLOGISTS' UNION, we are pleased to note, has recently been inaugurated and will hold its "first General Meeting at Adelaide in October or November," for the election of officers and permanent organization. The objects of the Society, as stated in its 'Provisional Rules,' are "the advancement and popularization of the Science of Ornithology, the protection of useful and ornamental avifauna, and the editing and publication of a magazine or periodical, to be called 'The Emu,' or such magazine or periodical as the Society may from time to time determine upon." The financial year of the Union began the 1st of July, 1901, and the first number of 'The Emu' is to be issued early in October. A 'general meeting' is to be held annually, "in the capital of one or other of the

different States, such capital to be decided at the previous Annual Meeting." In purposes and methods this second 'A. O. U.' is planned on much the same lines as our own A. O. U., and we wish it equal success.

THE BIRD CLUB OF PRINCETON UNIVERSITY was organized early during the present year with the following officers: President, William Arthur Babson, B. S.; Vice-Presidents, Edward Wallace Scudder and John Rogers Williams; Secretary-Treasurer, Daniel Minor Rogers; Recorder, Charles Frederic Silvester. Its activity is evinced by the 'Bulletin of the Bird Club of Princeton University,' the first number bearing date September, 1901. "The Club will issue further Bulletins at such intervals as the accumulation or importance of original matter may warrant." The first number consists of 82 pages, giving a list of the officers and members of the Club, and an excellent annotated list of the birds of Princeton, as already noted (p. 408). Mr. W. E. D. Scott is editor of the 'Bulletin.'

DANA ESTES AND COMPANY of Boston announce in their list of fall publications the long expected new edition of the late Dr. Coues's 'Key to North American Birds.' The work, we understand, had been completely rewritten, and left in readiness for publication by its lamented author, and will contain a large number of wholly new illustrations, made expressly for the work, by Mr. Fuertes.

AN 'INDEX-VOLUME' to the 'Zoölogical Record' will soon be published, at the subscription price of 15 shillings (10 shillings to subscribers to the 'Zoölogical Record'). The index volume will cover the volumes XVII-XXXVII (1880-1900) of the 'Zoölogical Record,' and will include not only all of the new generic and subgeneric names, but such names as were omitted in the previous volumes, as well as those omitted from Scudder's well-known 'Nomenclator Zoölogicus,' published in 1882. Thus zoölogists may have at their disposal (in the 'Nomenclator Zoölogicus' and the new Index together) a complete list of all names of genera and subgenera used in Zoölogy up to the end of 1900. The subscription-list will be closed on the 1st of December, 1901, but a limited number of copies will be placed on sale at the price of £1 per copy.

A WORK entitled 'A Manual of the Birds of Iceland,' by the Rev. H. H. Slater, is announced for early publication by David Douglas, 10 Castle St., Edinburgh. It will embody the results of Mr. Slater's fifteen years' observations on the birds of Iceland. The subscription price is 5s net.

THE large collection of birds' eggs, nests and skins brought together by Miss Jean Bell of Ridley Park, Pa., has been purchased by Mr. John Lewis Childs, of Floral Park, New York. It is said to contain about 30,000 eggs and 1000 nests, and is reported to be one of the finest and

most complete private collections of North American birds' eggs extant. It includes many rarities, and is rich in large sets of comparatively rare species, the collection having been formed through the combination of several noteworthy private collections.

THE EXPEDITION sent out by the Department of Entomology and Ornithology, University of Nebraska, during the summer of 1901 spent the interim between May 25 and July 27 in the Pine Ridge region of northwest Nebraska, and consisted of the following members: Prof. Lawrence Bruner, Mr. J. C. Crawford, Jr., Mr. M. A. Carriker, Jr., and the writer. Prof. Bruner and Mr. Crawford spent but a short time in camp however, being called back to Lincoln by official duties.

The ornithological work was very successful and of considerable importance. Especially is this true in regard to breeding records, of which several new ones were added to the already large number of Nebraska breeders. The ranges of a number of birds were considerably extended, and various notes of interest in regard to the western species gathered.

A goodly number of sets of eggs, skins and photographs of birds, their nests and eggs are the result of the season's collecting, and will go to enrich the Department collection. A few general notes as to some of the more important results might be of interest; but for more specific details the 'Proceedings' of the third Meeting of the Nebraska Ornithologists' Union should be consulted.

Several colonies of White-throated Rock Swifts were found breeding in cracks and crevices on the face of almost inaccessible cliffs, and a number of their rare sets secured—eighteen eggs in all.

The breeding of the Sage Grouse, Brewer's Blackbird, Western Warbling Vireo, McCown's Longspur, Louisiana Tanager, Piñon Jay and Western Lark Sparrow was definitely established, although in each case confined to a comparatively small area in the extreme northwestern corner of the State.

Among other interesting things the Mockingbird was found breeding on Antelope and Indian Creeks, near the South Dakota line.

All of these additional breeding records, range-extensions, etc., will be of great value in a revised work on Nebraska birds. — MERRITT CARY
Neligh, Nebr.

INDEX TO VOLUME XVIII.

[New generic, specific and subspecific names are printed in heavy-faced type.]

- ACANTHIS** *cannabina*, 313.
 hornemanni exilipes, 41, 195.
 linaria, 41, 109, 195.
 linaria holboëllii, 41, 195.
 linaria rostrata, 41, 195, 395.
Accipiter *atricapillus*, 37.
 atricapillus striatulus, 403.
 cooperi, 37.
 velox, 37, 233.
Acridotheres *tristis*, 387.
Actitis *macularia*, 36, 92, 272, 340.
Actodromas, 319.
Æchmoptila *albifrons*, 14.
Ægialitis *meloda*, 316.
 meloda circumcincta, 316.
 vocifera, 36, 231, 266.
 wilsonia, 79.
Aeo, 386.
Aeronautes *melanoleucus*, 234.
Æstrelata *hypoleuca*, 385.
Agamia *agami*, 25.
Agelaius *imthurmi*, 286.
 longirostris, 303.
 phæniceus, 40, 236, 267, 342.
 phæniceus caurinus, 286, 317.
 phæniceus fortis, 286, 317.
 phæniceus longirostris, 303.
 phæniceus neutralis, 286, 317.
 phæniceus sonoriensis, 303.
Agyrtria *decora*, 359.
Aithurus *polytmus*, 407.
 scitulus, 407.
Aix *sponsa*, 35.
Ajaia, 297.
Ajaja, 297.
Akekeke, 386.
Alae, 385.
Alauda *arvensis*, 116.
Albatross, Black-footed, 201, 384.
Alca *arctica*, 277.
Allen, Glover Morrill, see Howe, Reginald Heber, Jr.
Allen, J. A. In memoriam: George Burritt Sennett, 11-23; republication of descriptions of new species and subspecies of North American birds, No. II, 172-185; the question of the generic name *Gavia*, 270.
Alopochen *ægyptiacus*, 312.
Aluco, 316.
Aluconida, 316.
Amazilia, 301.
Amazilius *cerviniventris*, 301.
Amazona *panamensis*, 359.
 salvini, 25, 359.
 virenticeps, 359.
Amblycercus *holosericeus*, 370.
American Ornithologists' Union, Eighteenth Congress of, 63-67; Report of Committee on Protection North American Birds, 68-104; Tenth Supplement to the American Ornithologist's Union Check-List of North American Birds, 295-320; Nineteenth Congress of, announcement, 412.
Ames, J. H., nesting of Cory's Bittern (*Ardetta neoxena*) and other notes, 106.
Amizilis, 301.
 edwardi, 28.
 fuscicaudata, 359.
 cerviniventris, 301.
 cerviniventris chalconota, 436.
 tzacatl, 301.
Ammodramus *caudacutus*, 267.
 caudacutus diversus, 269.
 halophilus, 303.
 lecontei, 129-134.
 maritimus, 117.
 maritimus sennetti, 23.
 nelsoni, 116, 268.
 princeps, 262, 267.
 rostratus halophilus, 303.
 samuelis, 304.
 sandwichensis alaudinus, 397.
 sandwichensis savanna, 42, 267, 342.
 sandwichensis xanthophrys, 209.
 savannarum, 148, 149.

- Ammodramus savannarum passerinus*, 342.
Ampelis cedrorum, 43, 343.
 garrulus, 42.
Amphispiza belli clementæ, 313.
 belli nevadensis, 318.
 nevadensis, 318.
Anas boschas, 35, 332.
 fulvigula maculosa, 22.
 maculosa, 22, 23.
 obscura, 35, 264.
 wywilliana, 385.
Anatidæ, 328, 331.
Ancylocheilus, 319.
Anorthura, 320.
 hiemalis, 44, 345.
 hiemalis helleri, 181, 307.
 hiemalis pacifica, 320.
 meligera, 307.
Anous stolidus, 55.
Anser albifrons gambeli, 135.
Anthony, A. W., habits of the Gooney, 189.
Anthus pensilvanicus, 44.
 rufus parvus, 368.
 spraguei, 275.
Antrostomus, 317.
 carolinensis, 168, 359.
 vociferus, 39, 341.
Apapane, 387.
Aphelocoma californica immanis, 188.
Apos, 121.
Apus, 121.
Aquila chrysaëtos, 38, 233.
 chrysaëtos canadensis, 21.
Ara macao, 358.
Aramides cayana chiricote, 358.
Archibuteo lagopus sancti-johannis, 37, 393.
Ardea carulea, 392.
 candidissima, 392.
 herodias, 36, 199, 265, 340.
 herodias fannini, 282, 297.
 tricolor, 373.
 wardi, 282, 315.
Ardetta exilis, 36.
 neoxena, 106.
Arenaria interpres, 298, 386.
 morinella, 173, 297.
Aristonetta, 319.
Arquatella, 319.
Arremon aurantirostris, 369.
Arremonops conirostris, 370.
Asarcia variabilis, 358.
Asio accipitrinus, 38, 164, 386.
 accipitrinus mcilhennyi, 174, 312.
Asio sandwichensis, 154.
 wilsonianus, 38, 233.
Astragalinus tristis, 41, 201, 236, 342.
Astur, 319.
Asturina ruficauda, 24.
Asyndesmus, 319.
Atthis, 320.
Attila sclateri, 365.
Audubon Society of New York State, fifth annual meeting of, 224.
Auk, Black-throated, 21.
Auklet, Cassin's, 201.
 Paroquet, 104.
Auku kohili, 385.
Auriparus flaviceps, 15.
Australasian Ornithologists' Union, 414.
Automolus exsertus, 367.
Avocet, 75, 331.
Aythya affinis, 35.
 americana, 35, 264.
 marila, 35, 264.
 marila nearctica, 199.
BABSON, William Arthur, notice of his 'Birds of Princeton, N. J.', 408.
Baldpate, 333, 335.
Bangs, Outram, birds of San Miguel Island, Panama, 23-32; a new Ground Dove from Western Mexico, 257; notice of his paper on a new Meadowlark from South America, 281; on a collection of birds made by W. W. Brown, Jr., at David and Divala, Chiriqui, 355-370; notice of papers by, on new American birds, 406, notice of his paper on birds from the Liu Kiu Islands, 407. See also Brewster, William.
Bangs, Outram, and Bradlee, Thomas S., the resident land birds of Bermuda, 249-257.
Barrington, Richard M., notice of his 'The Migration of Birds at Irish Light Stations,' 205.
Bartramia longicauda, 112, 358.
Basileuterus leucopygius veraguensis, 368.
Bates, Abby F. C., Maine bird notes, 400.
Bent, A. C., nesting habits of the Anatidæ in North Dakota, 328; nesting of the Rough-legged Hawk in North Dakota, 393.

- Bernicla, sp., 202.
 minima, 202.
 nigricans, 202.
- Bigelow, Henry Bryant, a Virginia record for the American Eider (*Somateria dresseri*), 189.
- Bignell, Effie, notice of her 'Mr. Chupes and Miss Jenny,' 288.
- Bird, Cedar, 343.
 Indigo, 343.
 Red, 256.
 Sultana, 386.
 Yellow-billed Tropic, 105.
- Bird Club of Princeton University, 415.
- Birtwell, Francis J., two interesting records from New Mexico, 112; description of a supposed new subspecies of *Parus* from New Mexico, 165-167; nesting habits of the Evening Grosbeak (*Coccothraustes vespertinus*), 388-391; obituary of, 413.
- Bishop, Louis B., rachitis in young Red-shouldered Hawks, 192; the European Starling in Connecticut, 194; Montana Redpolls, 195; *Acanthis linaria rostrata* and *Xanthocephalus xanthocephalus* in Connecticut, 195; deformity of maxilla in the House Sparrow, 195; the winter birds of Pea Island, North Carolina, 260-268; a new Sharp-tailed Finch from North Carolina, 269.
- Bittern, American, 36, 200, 265.
 Cory's, 106.
 Least, 36.
- Blackbird, 253.
 Brewer's, 236, 416.
 Red-winged, 40, 154, 236, 261, 331, 342.
 Rusty, 41, 154, 200, 267.
 Yellow-headed, 195, 330.
- Bluebird, 45, 249, 254, 347.
 Mountain, 238, 276.
- Boardman, George A., obituary of, 219.
- Bobolink, 40, 329, 342.
- Bob-white, 249, 250.
 Least, 47.
- Bonasa umbellus togata, 37, 340.
- Bond, Frank, Great Gray Owl in Wyoming, 107; song of the Western Meadowlark, 108.
- Bonhote, J. Lewis, on a collection of birds made by Mr. J. R. Thompson at the Cay Lobos Lighthouse Bahamas, 145-149.
- Botaurus lentiginosus, 36, 265.
- Bradlee, Thomas S., see Bangs, Outram.
- Brant, 265.
 Black, 385.
- Branta bernicla, 265.
 canadensis, 36, 265.
 nigricans, 385.
- Brewster, William, on the occurrence, in Massachusetts, of certain rare or interesting birds, 135-137; the Meadowlark (*Sturnella magna*) at Rangeley, Maine, 194; Bell's Vireo and the Sandhill Crane in New Hampshire, 274; an ornithological mystery, 321-328; nesting of the Carolina Wren (*Thryothorus ludovicianus*) in southern Massachusetts, 397.
- Brewster, William, and Bangs, Outram, notice of their paper on a new Bécard from Lower Uruguay, 281; do., on a new *Aithurus* from Jamaica, 410.
- Brotogerys jugularis, 359.
- Brown, E. J., Florida bird notes, 199.
- Brown, Herbert, Bendire's Thrasher, 226-231; a Band-tailed Hawk's nest,—an Arizona incident of biographical interest, 392.
- Brown, John Clifford, obituary of, 220.
- Bryan, William Alanson, a list of the Hawaiian birds in the St. Louis College collection, Honolulu, H. I., including records of several North American species, 382-387.
- Bubo virginianus, 38, 233, 340.
 virginianus arcticus, 113.
 virginianus pallens, 300.
 virginianus subarcticus, 38, 113, 300.
 virginianus saturatus, 38, 113.
- Bucco dysoni, 360.
- Buffel-head, 35, 264, 385.
- Buri, Rud. O., notice of his paper on the anatomy and relations of the Swifts, 286.
- Bunting, Indigo, 42.
 Lark, 237, 329.
 Lazuli, 237.
 Snow, 195.

- Buteo abbreviatus*, 393.
albicaudatus, 15.
albicaudatus sennetti, 15, 23.
borealis, 37, 233.
borealis krideri, 233.
borealis umbrinus, 407.
latissimus, 37, 299.
lineatus, 37, 192.
platypterus, 218, 299.
solitarius, 163, 386.
swainsoni, 233.
Buteola, 319.
Butorides, 319.
virescens, 25, 402.
 Butterfield, W. Ruskin, occurrence of Baird's Sandpiper in Sussex, England, 190.
Cacicus microrhynchus, 370.
 Cacky-quaw, 326.
Calamospiza melanocorys, 237.
Calcarius lapponicus, 41, 396.
lapponicus alascensis, 396.
Calidris arenaria, 202, 266, 386.
Calospiza larvata fanny, 369.
Campophilus guatemalis buxans, 360.
Canachites canadensis, 36, 277.
canadensis canace, 277.
canadensis labradorius, 120, 277, 298.
canadensis osgoodi, 298.
 Cardinal, 153, 201, 249.
 Bermuda, 256.
Cardinalis bermudianus, 256.
cardinalis, 201.
Carduelis carduelis, 116, 255.
Carpodacus mexicana frontalis, 311.
purpureus, 41, 201, 342.
 Cary, Merritt, occurrence of the Mexican Crossbill at Neligh, Neb., 109; birds of the Black Hills, 231-238; Nebraska University Expedition of 1901, 416.
Cassidix oryzivora mexicana, 370.
 Catbird, 44, 151, 238, 249, 345.
 Bermuda, 253.
Cathartes aura, 232, 266.
Centrocercus urophasianus, 232.
Centurus, 319.
Ceophloeus pileatus, 193.
pileatus abieticola, 39, 340.
Cephus grylle, 92.
Cerchneis sparveria, 358.
Cercomacra crepera, 365.
maculicaudis, 30.
Certhia familiaris americana, 308, 345.
Certhia familiaris fusca, 44, 308.
familiaris occidentalis, 403.
familiaris zelotes, 182, 308.
Certhiola sp.?, 148.
Ceryle alcyon, 39, 233, 340.
amazona, 359.
americana septentrionalis, 359.
inda, 26.
superciliosa stictoptera, 359.
torquata, 26, 359.
Chaetura pelagica, 39, 341.
Chamaea fasciata, 291, 292, 319.
fasciata henshawi, 319.
fasciata intermedia, 178, 319.
fasciata phaea, 308.
 Chapman, Frank M., the correct name for the Florida Yellowthroat, 198; notice of his 'A Study of the Genus *Sturnella*', 212; notice of his paper on a new race of the Great Blue Heron, etc., 282; notice of his paper on new birds from Peru, 407.
Charadrius dominicus fulvus, 386.
morinellus, 297.
squatarola, 202.
Charitonetta, 319.
albeola, 35, 264, 385.
Chasmorhynchus tricarunculatus, 365.
 Chat, Long-tailed, 238.
Chaulelasmus streperus, 333.
Chelidon erythrogaster, 343.
Chenalopex aegyptiacus, 312.
Chen hyperborea nivalis, 35, 264.
rossi, 392.
 Chickadee, 45, 345.
 Barlow's, 178.
 Chestnut-backed, 403.
 Hudsonian, 45.
 Long-tailed, 238.
 Chick-choo-willio, 252.
 Chick-of-the-village, 252.
 Chicken, Mother Carey's, 105.
Chiroxiphia lanceolata, 365.
Chlorochrysa fulgentissima, 407.
Chlorodrepanis wilsoni, 387.
Chlorophanes spiza guatemalensis, 369.
Chlorospingus flavigularis parvirostris, 407.
Chlorostilbon assimilis, 28, 359.
Chondestes grammacus strigatus, 236.
Chordeiles virginianus, 39, 341.
virginianus henryi, 234.
virginianus sennetti, 23.

- Chroicocephalus*, 319.
 Chuck-wills-widow, 168.
Ciccaba nigrolineata, 358.
Circus hudsonius, 37, 266.
Cistothorus griseus, 311.
 marianæ, 268.
 palustris griseus, 311.
Clangula clangula americana, 35.
Claravis pretiosa, 358.
 Clark, Hubert Lyman, the ptery-
 losis of *Podargus*, with notes on
 the pterylography of the Capri-
 mulgi, 167-171; the classification
 of birds, 370.
 Clarke, C. K., notes from Ontario,
 112; Ontario notes, 401.
 Clarke, Wm. Eagle, *Acanthis linaria*
rostrata in the Outer Hebrides,
 395.
Clivicola riparia, 42, 117, 343.
Coccothraustes vespertinus, 41, 388-
 391.
Coccyzus americanus, 38.
 erythrophthalmus, 39, 340.
 minor, 148.
 Cock, Chaparral, 21.
Cœreba cerinoclunis, 406.
 mexicana, 369.
 mexicana colombica, 30.
 Coggins, Herbert L., the Hermit
 Thrush on Martha's Vineyard,
 Mass., 111; the Western Savanna
 Sparrow in North Carolina, 397.
Colaptes auratus, 399.
 auratus luteus, 39, 234, 340.
 cafer, 234, 301.
 cafer collaris, 301.
 collaris, 301.
Colinus minor, 47.
 virginianus, 250.
 Collett, Robert, see Shufeldt, R. W.
Colopterus pilaris, 361.
Columba nigriristris, 358.
 rufina, 358.
 squamosa, 299.
Columbigallina bermudiana, 250.
 rufipennis, 25, 358.
 rufipennis eluta, 258.
 passerina, 192.
Colymbus auritus, 34.
 dominicus, 296.
 dominicus brachypterus, 172,
 296.
 holbœllii, 34, 270.
 Comey, Arthur C., the Hooded
 Warbler in Massachusetts, 397.
Compsothlypis americana usnea,
 43, 343.
Contopus, 317.
 borealis, 40, 395.
 richardsonii, 234.
 richardsonii saturatus, 317.
 virens, 40, 341.
Conurus finschi, 358.
 ocularis, 359.
 Coot, American, 36, 330.
 Hawaiian, 386.
 Cormorant, Mexican, 189.
 Pelagic, 201.
Corvus americanus, 40, 155, 234,
 253, 342.
 corax principalis, 40, 108.
 hawaiiensis, 387.
Coturniculus, 319.
 Coues, Elliott, memorial of, with
 portrait, 1-11.
 Cowbird, 40, 150, 330, 342.
 Crane, Corn, 249.
 Crane, Sandhill, 36, 274.
 Whooping, 36.
 Creeper, Brown, 44, 345.
 California, 403.
 Sierra, 182, 308.
 Crossbill, 342.
 American, 41, 236.
 Mexican, 109, 236.
 White-winged, 41, 403.
Crotophaga ani, 26, 148, 360.
 sulcirostris, 15.
 Crow, 253.
 American, 40, 155, 235, 249,
 342.
 Fish, 154.
 Hawaiian, 387.
Crymophilus, 314.
 fulicarius, 271, 386.
Cryptoglaux, 193.
 acadica, 193.
 tengmalmi richardsoni, 193.
Crypturus soui modestus, 25, 356.
 Cuckoo, Black-billed, 39, 330, 340.
 Yellow-billed, 38.
 Curlew, Hudsonian, 36.
 Long-billed, 75, 232.
Cyanerpes cyaneus, 31.
 cyaneus carneipes, 369.
 lucida, 369.
Cyanocephalus cyanocephalus, 234.
Cyanocitta cristata, 40, 342.
 stelleri carbonacea, 174, 312.
 stelleri diademata, 302.
 stelleri macrolopha, 302.
Cyanocorax affinis zeledoni, 368.
 luxuosa, 292.
Cyanogarrulus diadematus, 302.
Cyanospiza cyanea, 42, 343.

- Cyclorrhynchus psittaculus*, 104.
Cygnus americanus, 21.
Cymochorea, 319.
Cypseloides niger borealis, 394.
Cypselus, 121.
 melba, 286.
Cyrtonyx massena, 291, 292.

DACNIS pulcherrimus, 286.
 ultramarinus, 369.
Dafila acuta, 35, 202, 385.
 Daniel, John W., Jr., occurrence of the Glossy Ibis at Washington, D. C., 271; nesting of the Hairy Woodpecker near Washington, D. C., 272; Bachman's Sparrow in Virginia, 273.
 Dawson, W. Leon, *Tringa solitaria cinnamomeus*—a correction, 272; additional notes on the birds of Okanogan (Chelan) County, Washington, 402.
 Deane, Ruthven, unpublished letters of William MacGillivray to John James Audubon, 239-249; manuscript of Emmons's Catalogue of Massachusetts birds, 403.
Dechonychura typica, 367.
 Delaware Valley Ornithological Club, 223; notice of 'Proceedings' of, 280.
Dendragopus obscurus, 232.
Dendrocincla anabatina, 367.
Dendrocolaptes sanctithomæ, 367.
Dendrocygna discolor, 358.
Dendroica æstiva, 43, 237, 343, 368.
 auduboni, 237.
 blackburniæ, 44, 344, 399.
 cærulescens, 43, 110, 137-142, 147, 149, 343.
 castanea, 43.
 coronata, 43, 147, 149, 344.
 coronata hooveri, 313.
 discolor, 106, 147, 149.
 maculosa, 43, 344.
 nigrirostris, 109, 306.
 palmarum, 116.
 pensylvanica, 43, 344, 369.
 striata, 147, 149, 344.
 tigrina, 147, 149.
 viellotii, 30.
 vigorsii, 44.
 virens, 44, 344.
Dendronis lacrymosa, 367.
 nana, 367.
 Dexter, Newton, obituary of, 413.
Dichromanassa, 319.

Diomedea nigripes, 384.
Diplopterus navius, 360.
 Dippie, G. F., Snowy Heron in Alberta, 392.
Dolichonyx oryzivorus, 40, 148, 149, 342.
 Dotterel, 297.
 Dove, Bermuda Ground, 250.
 Ground, 192, 249.
 Mourning, 37, 201, 232, 276, 330.
 Dowitcher, Long-billed, 157-160.
Dryomphila boucardi, 365.
 intermedia, 30.
Dryobates borealis, 156.
 pubescens medianus, 39, 233, 340.
 villosus, 272, 340.
 villosus hyloscopus, 233.
 leucomelas, 39.
 Dubois, A., notice of Parts II-IV of his 'Synopsis Avium,' 121.
 Duck, American Scaup, 35.
 Black, 35, 264.
 Dusky, 200.
 Greater Scaup, 199.
 Hawaiian, 385.
 Lesser Scaup, 35, 333, 334, 336.
 Scaup, 264.
 Wood, 35.
 Dutcher, William, Report of the Committee on the Protection of North American Birds, 68-104.
 Dwight, Jonathan, Jr., the sequence of moults and plumages of the Laridæ (Gulls and Terns), 49-63; review of his 'Sequence of Plumages and Moults of the Passerine Birds of New York,' 114; notes on the moulting of *Spinus pinus* and of *Hirundo erythrogaster*, 203.
 Dykes, 319.

 EAGLE, Bald, 151, 267.
 Golden, 21, 38, 233.
 Northern Bald, 38.
 Eaton, Elon Howard, notice of his 'Birds of Western New York,' 212.
 Eckstorm, Mrs. Fannie Hardy, notice of her 'The Bird Book,' 209; notice of her 'The Woodpeckers,' 210.
Ectopistes migratorius, 37, 191.
 Eider, American, 189, 200.

- Eider, King, 22.
Elania pagana subpagana, 28, 363.
 placens, 30.
 sordidata, 28.
Elainea arenarum, 30.
Elanoides forficatus, 37.
 Elliott, D. G., in memoriam: Elliott
 Coues, 1-11.
Empidonax flaviventris, 40, 341,
 363.
 minimus, 40, 235, 341, 363.
 traillii, 235, 363.
 traillii alnorum, 40, 108, 341,
 347-355.
 trepidus, 47.
 virescens, 235.
Ereunetes occidentalis, 266.
 pusillus, 107.
Eucometes spodocephala, 369.
Eudomychura, 319.
Eudromias morinellus, 297.
Euphonia crassirostris, 369.
 gracilis, 369.
 luteicapilla, 369.
 xanthogastra brunneifrons,
 407.
Exanthemops, 319.
FALCO columbarius, 38.
 columbarius richardsoni, 316.
 latissimus, 217.
 pennsylvanicus, 217.
 peregrinus anatum, 38.
 richardsoni, 316, 403.
 sparverius, 38, 233, 276, 340.
 wilsoni, 217.
 Farley, J. A., the Purple Gallinule
 in Massachusetts in the breeding
 season, 190; probable breeding
 of the Red-bellied Nuthatch near
 Boston, 198; the Alder Fly-
 catcher (*Empidonax traillii alno-
 rum*) as a summer resident of
 eastern Massachusetts; 347-355;
 Massachusetts bird notes, 398.
 Faxon, Walter, the Newfoundland
 Veery (*Hylocichla fuscescens ful-
 ginosa*) in Massachusetts, 198;
 early editions of Wilson's Orni-
 thology, 216-218.
 Felger, A. H., the American Cor-
 morant in Colorado, 189.
 Finch, Grass, 155.
 Pine, 203.
 Purple, 41, 201, 342.
 Fleming, James H., a list of the
 birds of the Districts of Parry
 Sound and Muskoka, Ontario,
 33-45; nesting of Cory's Bittern
 at Toronto, Canada, 106; Euro-
 pean Lapwing in the Bahamas,
 272; corrections to birds of Parry
 Sound and Muskoka, 276.
 Flicker, Northern, 39, 234, 341.
 Red-shafted, 201, 234.
Floricola superba pallidiceps, 360.
 Florida, 319.
Florisuga mellivora, 359.
 Flycatcher, Acadian, 235.
 Alder, 40, 108, 341, 347-355.
 Chancol, 47.
 Couch's Tyrant, 21.
 Crested, 39, 341.
 Fork-tailed, 21.
 Least, 40, 235, 341.
 Olive-sided, 40, 201, 395.
 Santa Barbara, 302.
 Traill's, 235.
 Vermilion, 75, 273.
 Yellow-bellied, 40, 341.
Formicarius umbrosus, 366.
 Fox, William J., the so-called
 cancelled fasciculus of Cassin's
 'Illustrations,' 291.
Fratercula arctica, 92, 277.
 arctica naumanni, 277.
Fringilla fasciata, 304.
 frontalis, 311.
 gambelii, 303.
 melodia, 304.
Fulica alai, 386.
 americana, 36.
Fuligula, 319.
Fulmarus glacialis, 315.
 glacialis minor, 315.
 glacialis rogersi, 296.
 rogersi, 296.
 GADWALL, 333.
Galbula melanogenia, 360.
Galeoscoptes burmudianus, 253.
 carolinensis, 44, 238, 345.
Gallinago delicata, 36, 158.
 major, 316.
 media, 316.
Gallinula galeata, 36, 251.
 sandvicensis, 385.
Gallinule, Florida, 36, 249, 251.
 Hawaiian, 385.
 Purple, 190, 398.
 Gätke, Heinrich, notice of his
 'Helgoland,' second German edi-
 tion, 206.

- Gavia*, 270, 300.
 imber, 34, 263.
 ridibunda phænicopos, 271, 309.
Geochelidon nilotica, 55, 79.
Geococcyx affinis, 310.
 californianus, 21, 310.
 mexicanus, 310.
Geothlypis agilis, 116.
 formosa, 368.
 philadelphia, 44, 344.
 tolmiei, 238.
 trichas, 44, 111, 147, 197, 344.
 trichas arizella, 306.
 trichas brachydactyla, 319.
 trichas ignota, 198, 319.
 trichas occidentalis, 238.
 trichas roscoe, 197, 198, 319.
 trichas scirpicola, 407.
 trichas sinuosa, 407.
 trichas trichas, 197.
Geotrygon montana, 358.
Geranospizias niger, 358.
Glaucidium ferrugineum, 14.
 palmarum, 46.
 phalænoides, 14, 22.
 Godwit, Marbled, 330.
 Pacific, 386.
 Golden-eye, American, 35.
 Goldfinch, American, 41, 201, 236, 342.
 European, 249, 255.
 Gooney, 189.
 Goose, American White-fronted, 135.
 Canada, 36, 264, 412.
 Emperor, 105.
 Greater Snow, 35, 264.
 Hawaiian, 385.
 Ross's Snow, 392.
 Goshawk, American, 37.
 Western, 403.
 Gould, Alice Bache, notice of her 'Louis Agassiz,' 285.
 Grackle, Boat-tailed, 267.
 Bronzed, 41, 152, 236, 330.
 Purple, 152.
Graculus dilophus, 149.
 sp., 202.
Grallaria perspicillata, 367.
Granatellus venustus, 110.
 Grebe, Holbæll's, 34, 270.
 Horned, 34, 200.
 Pied-billed, 34, 330.
 Grinnell, Joseph, notice of his 'Birds of the Kotzebue Sound, Region,' 119; two races of the Varied Thrush, 142-145; the Long-tailed Jay, 188; notice of his 'Record of Alaskan Birds,' etc., 209; the Monterey Hermit Thrush, 258-260; notice of his paper 'Two Races of the Red-breasted Sapsucker,' 282, notice of his paper on new California birds, 407.
 Grosbeak, Black-headed, 237.
 Cardinal, 201.
 Evening, 41, 388, 391.
 Pine, 41, 236.
 Rose-breasted, 42, 330, 343.
 Western Black-headed, 176.
 Grouse, Alaska Spruce, 298.
 Canada, 36.
 Canadian Ruffed, 37, 340.
 Dusky, 232.
 Labrador Spruce, 277, 298.
 Prairie Sharp-tailed, 232.
 Ruffed, 190.
 Sage, 232, 416.
 Sand, 211.
 Sharp-tailed, 37.
Grus americana, 36.
 mexicana, 36, 274.
 Guillemot, Black, 92.
 Gull, American Herring, 34, 264.
 Black-backed, 264.
 Black-headed, 79, 82.
 Bonaparte's, 56, 104, 199, 200, 264, 403.
 California, 383.
 Flood, 81.
 Franklin's, 329, 384.
 Glaucous, 200.
 Herring, 58, 90, 94, 150, 402.
 Iceland, 106.
 Kittiwake, 52, 94.
 Laughing, 79, 80, 81, 83.
 Mackerel, 82.
 Point Barrow, 383.
 Ring-billed, 35, 94, 150, 333, 384.
 Sabine's, 113, 392.
 Western, 201.
Gymnocichla nudiceps, 366.
Gymnogyps, 299.
 californianus, 299.
Gymnophis bicolor olivaceus, 366.
 HABIA melanocephala, 402.
 Hæmatopus bachmani, 316.
 niger, 316.
 palliatus, 79, 136.

- Haliaeetus leucocephalus*, 267.
 leucocephalus alascanus, 38.
Harelda hyemalis, 35, 105, 264.
Harporhynchus bendirei, 225-231.
 longirostris sennetti, 23.
 palmeri, 231.
 rufus, 44, 238, 276.
Hartlaub, Gustav, obituary of, 219.
Hawk, American Rough-legged, 37.
American Sparrow, 38, 151, 233, 276.
Band-tailed, 392.
Broad-winged, 37, 217, 218.
Brown, 163.
Cooper's, 37.
Duck, 38.
Hawaiian, 386.
Kridler's Red-tailed, 233, 330.
Marsh, 37, 151, 266, 329.
Pigeon, 38.
Red-shouldered, 37, 192.
Red-tailed, 37, 233, 249.
Rough-legged, 151, 393.
Sharp-shinned, 217, 233.
Swainson's, 233, 329.
Sparrow, 340.
Hazard, R. G., early migration of Wild Geese, 411.
Heck, L., notice of his 'Living Pictures of the Animal Kingdom,' etc., 287.
Heleodytes zonatus restrictus, 49.
Helminthophila bachmani, 274.
 rubricapilla, 43, 343.
 rubricapilla gutturalis, 403.
 peregrina, 43, 369.
Helminthotherus vermivorus, 146.
Helodromas solitarius, 36.
Hemignathus affinis, 387.
 procerus, 387.
Hen, Marsh, 81.
Mud, 82.
Prairie, 329.
Henninger, W. F., a new bird for the State of Ohio, 392.
Henshaw, H. W., the Yellow-billed Tropic Bird in the Hawaiian Islands, 105; birds of prey as ocean waifs, 162-165; occurrence of *Tringa maculata* and other American birds in Hawaii, 202.
Herodias, 319.
Heron, Black-crowned Night, 36, 385.
 Great Blue, 36, 75, 199, 249, 265, 282, 340.
 Green, 402.
 Heron, Little Blue, 392.
 Northwest Coast, 297.
 Night, 330.
 Snowy, 392.
Herrick, Francis Hobart, notice of his 'The Home Life of Wild Birds,' 287.
Hesperiphona, 319.
Hesperocichla naevia meruloides, 143, 319.
 naevia naevia, 142.
Heteractitis incanus, 386.
Heteropygia, 319.
 bairdi, 190.
Heterorhynchus wilsoni, 387.
Hierofalco, 319.
Himantopus knudseni, 386.
Himatione sanguinea, 387.
Hirundo erythrogastra, 42, 117, 203, 237.
 erythrogastra unalaschensis, 176, 313.
 unalaschkensis, 177, 209, 313.
Hoffmann, Ralph, notice of his 'Common Birds; Second Series,' 123; see also, Seton-Thompson, Ernest.
Hollister, N., capture of Sabine's Gull in Wisconsin, 392.
Horizopus, 317.
 richardsonii, 363.
 virens, 194.
Howe, Reginald Heber, Jr., sexual difference in size in the Pectoral Sandpiper (*Tringa maculata*), 107; the breeding of the Hermit Thrush on Martha's Vineyard Island, 111; a study of the genus *Macrorhamphus*, 157-162; an additional note on the genus *Macrorhamphus*, 272; the migratory movements of the Lapland Longspurs in North America, 396.
Howe, Reginald Heber, Jr., and Allen, Glover Morrill, notice of their 'The Birds of Massachusetts,' 278.
Howell, Arthur H., a preliminary list of the summer birds of Mount Mansfield, Vermont, 337-347.
Hummingbird, Broad-tailed, 234.
 Calliope, 403.
 Ruby-throated, 39, 153, 199, 341.
Hunakai, 386.
Hydranassa, 319.

- Hydrochelidon nigra surinamensis*, 55.
Hydrocoleus, 320.
Hylocichla aliciae bicknelli, 345.
 aonolaschkae, 184, 260.
 aonolaschkae nanus, 185.
 aonolaschkae pallasii, 45, 111, 346.
 aonolaschkae sequoiensis, 260.
 aonolaschkae slevisi, 258.
 aonolaschkae verecunda, 183, 319.
 fuscescens, 45, 345.
 fuscescens fuliginosa, 198, 314.
 guttata pallasi, 111.
 mustelina, 45, 345.
 ustulatus almae, 309.
 ustulatus swainsonii, 45, 238, 346.
Hylocharis eliciae, 359.
Hylophilus flavipes viridiflavus, 368.

IBIS, Glossy, 271.
Ibycter americanus, 358.
Icteria virens, 117.
 virens longicauda, 238.
Icterus bullocki, 236.
 cucullatus sennetti, 286, 317.
 galbula, 40, 236, 342, 370.
Ictinia plumbea, 25.
Iiwi, 387.
Io, 386.
Ionornis martinica, 190, 398.
Iridophanes, 286.
Iridoprocne, 320.

JAY, Blue, 40, 342.
 Canada, 40, 342.
 Coast, 174.
 Gray, 302.
 Long-tailed, 188.
 Piñon, 235, 416.
 Rocky Mountain, 235.
Job, Herbert K., the Pileated Woodpecker in Connecticut, 193; notes from the Magdalen Islands, 199.
Johnny Ho, 326.
Jordan, Barbara, obituary of, 293.
Junco aikeni, 236.
 hyemalis, 42, 268, 342.
Junco, Slate-colored, 42, 268, 342.
 White-winged, 236.

KAKAWAHIE, 387.
Kahi akialoa, 387.

Kicker, 321.
Killdeer, 36, 153, 232, 266, 330.
Kingbird, 39, 234, 341.
 Arkansas, 234, 330.
 Common, 330.
Kingfisher, Belted, 39, 152, 233, 340.
Kinglet, Golden crowned, 45, 276, 345.
 Ruby-crowned, 45, 152, 276, Sitkan, 308.
Kirkwood, Frank Coates, the Cerulean Warbler (*Dendroica cerulea*) as a summer resident in Baltimore County, Maryland, 137-142; early occurrence of the Black Scoter in Maryland and Virginia, 190.
Kite, Swallow-tailed, 37.
Kittiwake, 94.
Kitty Go, 326.
Knight, Ora W., the Wheatear not a bird of Maine, 275.
Kobbé, Wm. H., Holbæll's Grebe on San Francisco Bay, 270.
Kolea, 386.
Koloa maoli, 385.
Koloa mapu, 385.

LAGOPUS lagopus, 37.
 leucurus, 181, 298.
 leucurus altipetens, 180, 298.
Lanio melanopygius, 369.
Lanius borealis, 43, 196.
 borealis invictus, 120, 177, 313.
 ludovicianus, 43, 196, 283.
 ludovicianus excubitorides, 237.
 ludovicianus migrans, 283, 318, 343.
Lark, Desert Horned, 235.
 Horned, 40, 267.
 Prairie Horned, 40, 341.
 Sky, 249.
Larus affinis, 63.
 argentatus, 58, 314, 402.
 argentatus smithsonianus, 34, 90, 94, 100, 264, 314.
 atricilla, 57, 79, 80, 81, 82.
 barrovianus, 61, 63, 383.
 brachyrhynchus, 61, 63.
 cachinans, 63.
 californicus, 61, 383.
 canus, 61.
 delawarensis, 35, 61, 94, 384.
 franklinii, 57, 384.
 glaucescens, 62, 189.

- Larus glaucus*, 61, 62.
heermanni, 61, 292.
hutchinsi, 62.
kumlieni, 62, 63.
leucopterus, 34, 61, 106.
marinus, 61, 264.
nelsoni, 62, 63.
occidentalis, 61, 62.
philadelphia, 56, 94, 104, 264, 403.
ridibundus, 57, 58.
schistisagus, 63.
vegæ, 63.
Lathria unirufa, 365.
Leptotila albifrons, 14.
rufinucha, 358.
verreauxi, 25, 358.
Leucosticte griseonucha, 209.
kadiaka, 175, 209, 313.
tephrocotis, 209.
Limicolæ, 331.
Limonites, 320.
Limosa lapponica baueri, 386.
Lipaugus holerythrus, 365.
Longspur, Alaskan, 396.
Chestnut-collared, 329.
Lapland, 41, 396.
McCown's, 329, 416.
Loomis, Leverett M., the Paroquet Auklet in California, 104; on the southern limit of the range of Bonaparte's Gull (*Larus philadelphia*), 104; the Old Squaw at San Francisco, 105; the Emperor Goose in the interior of California, 105; the Raven in Polk County, North Carolina, 108; an addition to the A. O. U. Check-List, 109; *Granatellus venustus* in Sinaloa, 110; birds observed during a steamer voyage from San Francisco to Victoria, British Columbia, 201; notice of his 'California Water Birds, No. V,' 208.
Loon, 34, 201, 263.
Lophodytes cucullatus, 35, 276, 331.
Lophophanes, 320.
atricristatus, 15, 291, 292.
Lophortyx californica, 386.
Lophostrix stricklandi, 358.
Lowe, Willoughby P., bird notes from Pueblo County, Colorado, 276.
Loxia curvirostra bendirei, 317.
curvirostra minor, 41, 236, 342.
Loxia curvirostra stricklandi, 109, 236.
frontalis, 311.
leucoptera, 41, 401, 403.
MACGILLIVRAY, William, unpublished letters of, to John James Audubon, 239-249; memorial to, 293.
MacKinlay, James, obituary of, 221.
Macrocercus pachyrhyncha, 300.
Macrorhamphus griseus, 158, 272, 316.
griseus scolopaceus, 161, 272, 316.
Magpie, American, 40, 235.
Mailliard, Joseph, to remove fat from bird skins, 204.
Malacoptila panamensis, 360.
Malacothraupis castaneiceps, 407.
Mallard, 35, 331, 332.
Manacus aurantiaca, 365.
Mareca americana, 335.
penelope, 135.
Martin, Purple, 42, 152, 157, 330, 399, 400.
Maui, Amakihi, 387.
McGregor, Richard C., notice of his 'List of the Land Birds of Santa Cruz County, California,' 279.
Meadowlark, 40, 108, 151, 157, 194, 267.
Florida, 174.
Western, 108, 236, 276, 329.
Megaquiscalus, 286, 311.
Megarhynchus pitangua, 363.
Megascops asio, 39, 340.
asio maxwelliæ, 233.
asio trichopsis, 15.
brasiliensis, 358.
vermiculatus, 358.
Melanerpes chrysauchen, 360.
erythrocephalus, 39, 234, 341, 394.
formicivorus, 291, 292.
seductus, 26.
torquatus, 234.
wagleri, 360.
Meleagris fera, 310.
fera osceola, 310.
gallopavo, 15.
gallopavo ellioti, 22, 23.
gallopavo intermedia, 15, 22, 23, 310.
gallopavo merriami, 316.
intermedia, 310.

- Melospiza fasciata*, 42, 117, 304.
 fasciata caurina, 318.
 fasciata clementæ, 305.
 fasciata cooperi, 318.
 fasciata graminea, 305.
 fasciata ingersolli, 318.
 fasciata juddi, 305.
 fasciata merrilli, 305.
 fasciata montana, 304.
 fasciata pusillula, 318.
 fasciata rivularis, 305.
 georgiana, 42.
 heermanni, 304.
 melodia, 268, 304, 343.
 melodia clementæ, 305.
 melodia cleonensis, 175, 318.
 melodia fallax, 304.
 melodia graminea, 305.
 melodia heermanni, 304.
 melodia judii, 305.
 melodia kenaiensis, 319.
 melodia merrilli, 305.
 melodia montana, 304.
 melodia morphna, 305.
 melodia rivularis, 305.
 melodia rufina, 305.
 melodia samuelis, 304.
 melodia sanctæcrucis, 408.
 sanaka, 175, 318.
Merganser americanus, 35.
 serrator, 35, 264, 276.
Merganser, American, 35.
 Hooded, 35, 331.
 Red-breasted, 35, 200, 264.
Merlin, Richardson's, 403.
Merriam, C. Hart, notice of his
 'The Life Zones and Areas of
 Allegany County,' Maryland, 208.
Merula grayii casius, 368.
 leucauchen, 368.
 migratoria, 45, 238, 347, 401.
 migratoria achrostrera, 178,
 309.
Micrastur zonothorax, 358.
Micropallas whitneyi, 22.
Miller, James H., Brünnich's Murre
 in Lewis and Jefferson Counties,
 New York, 188.
Miller, W. D. W., breeding of the
 Alder Flycatcher (*Empidonax*
 traillii alnorum) near Plainfield,
 New Jersey, 108.
Milvulus, 193.
 forficatus, 193, 363.
 tyrannus, 193, 363.
Mina, 387.
Mionectes oleagineus, 28.
Mniotilta varia, 43, 146, 343, 369.
Mockingbird, 151, 155, 416.
Moho nobilis, 387.
Molothrus ater, 40, 342.
Momotus lessoni, 359.
Moore, Wm. H., the Loggerhead
 Shrike in New Brunswick, 196;
 New Brunswick notes, 201.
Mormon glacialis, 277.
Morris, Robert O., notice of his
 'The Birds of Springfield [Mass.]
 and Vicinity,' 279.
Motacilla leucorhoa, 309.
Murre, Brünnich's, 34, 188.
Muscicapa semiatra, 302.
Muscivora, 193.
 forficata, 194.
 regia, 193.
 tyrannus, 194.
Myiadestes townsendii, 238.
Myiarchus crinitus, 39, 341, 363.
 crinitus erythrocerus, 14, 15.
 panamensis, 30, 363.
Myiobius erythurus, 363.
 naevius, 30.
 sulphureipygius, 363.
Myiodynastes audax nobilis, 363.
Myiozetetes granadensis, 363.
 similis superciliosus, 363.
 similis texensis, 316.
 texensis, 316.
Myrmelastes intermedius, 367.
Myrmotherula menetriesii, 365.
NELSON, E. W., descriptions of five
 new birds from Mexico, 46-49.
Nene, 385.
Nesochen sandvicensis, 385.
Nettion carolinensis, 35.
 crecca, 135.
Newton, Alfred, award of Royal
 Medal to, by the Royal Society,
 223.
Night-hawk, 39, 341.
 Western, 234, 329.
Nonpariel, 75.
Norton, Arthur H., notice of his
 paper 'Birds of the Bowdoin
 College Expedition to Labrador
 in 1891,' 277.
Nucifraga columbiana, 235.
Numenius hudsonicus, 36.
Nutcracker, Clarke's, 235.
Nuthatch, Brown-headed, 156.
 Red-bellied, 198.
 Red-breasted, 45, 201, 238,
 345.

- Nuthatch, Slender-billed, 238.
White-breasted, 44, 345.
Nuttallornis, 320.
Nyctala, 193.
 acadica, 38, 233.
 tengmalmi richardsonii, 38.
Nyctanassa, 320.
 violacea, 25.
Nyctea nyctea, 38.
Nyticorax nycticorax *nævius*, 36,
 385.
Nyctidromus *albicollis*, 26, 359.
 albicollis merrilli, 21, 23.

ORERHOLSER, Harry C., *Milvulus*
 versus Muscivora, 193.
Oceanites *oceanicus*, 35, 105.
Ochthodromus, 320.
Ochthæca *keaysi*, 407.
Odontophorus *castigatus*, 356.
Oidemia *deglandi*, 264.
 perspicillata, 35.
Old-squaw, 35, 105, 264.
Olor, 315.
Onychorhynchus, 193.
 mexicanus, 194.
 occidentalis, 194.
 regius, 194.
 swainsoni, 194.
Onychotes *gruberi*, 163.
Oreomyza *flammea*, 387.
 newtoni, 387.
Oriole, Baltimore, 40, 236, 330, 342.
 Bullock's, 236.
Oriolus *flavus*, 286.
Ornismia *helosa*, 320.
Ornithion *imberbe*, 15.
 pusillum, 28, 362.
Orpheus *meruloides*, 143, 144.
Ortalis *cinereiceps*, 25, 356.
 struthopus, 406.
Orthorhynchus *amazili*, 301.
Ortygops, 320.
Oryzoborus *funereus*, 32.
Osprey, American, 38, 83.
Ostinops *decumanus*, 370.
Otocoris *alpestris*, 40, 267.
 alpestris arenicola, 235.
 alpestris praticola, 40, 277,
 341.
Oven-bird, 44, 344.
Owl, American Barn, 136.
 American Hawk, 38.
 American Long-eared, 38,
 233.
 Arctic Horned, 113.
 Barred, 38.

Owl, Burrowing, 233, 329.
 Dusky Horned, 38.
 Great Gray, 38, 107.
 Great Horned, 38, 233, 340.
 Richardson's, 38, 193.
 Rocky Mountain Screech,
 233.
 Saw-whet, 38, 193, 200, 233.
 Screech, 38, 340.
 Short-eared, 38, 164, 329, 386.
 Snowy, 38.
 Tepic Pigmy, 46.
 Texas Barred, 299.
 Western Horned, 300.
Oxyechus, 320.
 vociferus, 358.
Oyster-catcher, American, 79, 136.

PACHYRHAMPHUS *cinereiventris*,
 365.
 notius, 281.
Pallasicarbo, 320.
Palmer, T. S., and H. W. Olds,
 notice of their 'Laws regulating
 the transportation and sale of
 Game,' 123.
Palmer, William, the scientific
 name of the southern Yellow-
 throat, 197.
Pandion *haliaëtus carolinensis*, 38,
 83.
Parrot, Thick-billed, 300.
Partridge, Alaskan Spruce, 120.
 California, 386.
Parula *americana*, 146.
 nigrilora, 14.
Parus *atricapillus*, 45, 345.
 atricapillus septentrionalis,
 238.
 atricristatus castaneifrons,
 21, 23.
 bicolor texensis, 21, 23.
 carolinensis agilis, 21, 23.
 gambeli thayeri, 166, 314.
 hudsonicus, 45.
 hudsonicus evura, 319.
 hudsonicus stoneyi, 319.
 rufescens, 403.
 rufescens barlowi, 178, 314.
Passerculus, 320.
Passer *domesticus*, 41, 117, 195, 256.
Passerella *iliaca*, 42, 116.
 iliaca annectens, 318.
 iliaca fuliginosa, 318.
 iliaca insularis, 318.
 iliaca townsendi, 318.
 rufina, 305.

- Passerina amœna*, 237.
 nivalis, 41, 267.
 nivalis townsendi, 311.
 townsendi, 311.
 Peabody, P. B., nesting habits of
 Leconte's Sparrow, 129-134.
Pediæcetes phasianellus, 37.
 phasianellus campestris, 232.
Pelecanus californicus, 315.
 erythrorhynchus, 35.
 fuscus, 296.
 fuscus californicus, 315.
 occidentalis, 296.
 onocratalus occidentalis, 296.
 Pelican, American White, 35.
Pelidna, 320.
Penelope cristata, 356.
Perisoreus canadensis, 40, 342.
 canadensis capitalis, 235.
 obscurus griseus, 302.
Peteroglossus frantzii, 360.
Petrel, Bonin, 385.
 Wilson's, 35, 105.
Petrochelidon fulva, 373.
 lunifrons, 117, 237, 318.
 pyrrhonota, 318.
Peucea æstivalis bachmani, 273.
 ruficeps scottii, 21, 23.
 Pewee, Western Wood, 235.
 Wood, 194, 341.
Phaëthon æthereus, 105.
 americanus, 105.
 flavirostris, 149.
 lepturus, 385.
 rubricauda, 105.
Phaëthornis hyalinus, 27.
 longirostris, 359.
 longirostris susurrans, 406.
Phalacrocorax auritus, 315.
 bicristatus, 315.
 dilophus, 101, 315.
 mexicanus, 189.
 pelagicus, 315.
 pelagicus robustus, 315.
 urile, 315.
 vigna mexicanus, 315.
Phalacroptilus nuttallii, 234.
Phalarope, Northern, 201.
 Red, 271, 386.
 Wilson's, 330.
Phasianus mexicanus, 310.
 torquatus, 386.
 Pheasant, Ring-necked, 386.
Philacte canagica, 105.
Philohela minor, 36, 158.
Phœbe, 39, 234, 341.
 Say's, 234.
 Phœbe, Western Black, 301.
Phœbetria, 320.
Phœnicothraupis littoralis, 48.
Piaya cayana thermophila, 360.
Pica, 121.
Pica pica hudsonica, 40, 235.
Picicorvus, 320.
Picoides americanus, 39.
 americanus alascensis, 300.
 americanus bacatus, 312.
 americanus fasciatus, 300.
 americanus labradorius, 312.
 arcticus, 39, 234.
 arcticus tenuirostris, 317.
Picolaptes lineaticeps, 367.
Picumnus granadensis, 361.
Picus, 121.
 Pigeon, Passenger, 37, 191.
 Wild, 191.
Pinicola enucleator canadensis, 41,
 236.
Pintail, 35, 202, 331, 332, 333, 385.
Pionopsittacus hæmatotis, 359.
Pionus menstruus rubrigularis, 359.
Pipilo erythrophthalmus, 42, 236.
 fuscus carolæ, 306.
 maculatus arcticus, 237.
 maculatus atratus, 306.
 maculatus falcifer, 176, 313.
Pipit, American, 44, 150, 153, 201.
 Sprague's, 275.
Pipra leucorrhœa, 364.
 mentalis ignifera, 363.
 velutina, 363.
Piranga erythromelas, 42, 343.
 ludoviciana, 237.
 rubra, 273, 369.
Pitangus derbianus, 15.
Platyrhynchus superciliaris, 361.
Plectrophenax nivalis, 195.
Plegadis autumnalis, 271.
 falcinellus, 148.
Plover, Black-bellied, 202, 266.
 Golden, 331.
 Pacific Golden, 386.
 Wilson's, 79.
Podargus, pterylosis of, 167-171.
 gigas, 170.
Podasocys, 320.
Podilymbus podiceps, 34.
Polioptila bilineata, 368.
 Pollard, Evelyn H., notice of her
 'Birds of my Parish,' 207.
Poæcetes gramineus, 42, 155, 342.
 gramineus confinis, 236.
 Poor-will, 234.
Porphyrio melanotus, 386.

- Porzana coturniculus, 316.
 noveboracensis, 107.
Preble, Edward A., notice of his
 'The Summer Birds of Western
 Maryland,' 208.
Proctopus, 320.
Proganula palmeri, 385.
Progne subis, 117, 399, 400.
Protonotaria citrea, 369.
Psaltiriparus lloydii, 21.
Pseudagelaius, 286.
Pseudogryphus, 299.
Pseuduria, 320.
Psiloscops, 320.
Psittacirostra psittacea, 387.
Ptarmigan, Southern White-tailed,
 180, 298.
 White-tailed, 180.
 Willow, 37, 120.
Publications received, 124, 213, 289,
 409.
Pueo, 386.
Puffin, Arctic, 92.
 Tufted, 201.
Puffinus auduboni, 189.
 griseus, 315.
 major, 105.
 stricklandi, 315.
Pycraft, W. P., notice of his memoir
 on the Morphology of the Casso-
 waries, etc., 405.
Pyrocephalus rubineus mexicanus,
 273.
- QUAIL, 250.
Querquedula discors, 35, 232.
Quiscalus, 286, 311.
 major, 267.
 quiscula æneus, 41, 236.
- RAIL, Clapper, 22, 79, 80, 81, 83,
 136, 265.
 Carolina, 326.
 King, 326.
 Laysan, 385.
 Little Black, 326.
 Sora, 217, 330.
 Virginia, 217, 265, 326, 330.
 Wayne's Clapper, 265.
 Yellow, 107.
- Rallus carolinus, 217.
 crepitans, 79, 80, 81, 82, 83,
 136, 265, 315.
 crepitans waynei, 265, 297,
 373.
 longirostris, 22.
 longirostris caribæus, 22.
- Rallus longirostris crepitans, 315.
 longirostris saturatus, 313.
 longirostris scottii, 22, 23.
 scottii, 315.
 virginianus, 36, 217, 265.
- Ralph, W. L., notice of his contin-
 uation of 'Life Histories of North
 American Birds,' 294.
- Raven, Northern, 40.
- Redhead, 35, 264.
- Redpoll, 41, 195.
 Greater, 41, 195.
 Hoary, 41, 195.
 Holbæll's, 41, 195.
 Mealy, 395.
- Redstart, 344.
 American, 44, 238.
- Regulus calendula, 45, 276.
 calendula grinnelli, 308.
 satrapa, 45, 276, 345.
- Rhamphastos tocand, 360.
- Rhamphocelus dimidiatus, 369.
 limatus, 31.
 passerini, 369.
- Rhodacanthus palmeri, 387.
Rhodenocichla rosea, 368.
- Rhynchocyclus æquinoctialis, 363.
- Rhynchops nigra, 403.
- Rhynchopsitta, 300.
 pachyrhyncha, 300.
- Richmond, Charles W., new name
 for *Nyctala*, 193.
- Ridgway, Audubon Whelock, obitu-
 ary of, 221.
- Ridgway, Robert, notice of his
 'New Birds of the Families Tana-
 gridæ and Icteridæ, 286.
- Rissa tridactyla, 52, 57, 94, 310.
 tridactyla pollicaris, 310.
- Rives, William C., Audubon's
 Shearwater (*Puffinus auduboni*)
 on the coast of Virginia, 189.
- Robbins, Reginald C., Mother
 Carey's Chicken, 105; Maryland
 Yellow-throat at sea, 110; Ruffed
 Grouse in snow, 190.
- Robin, American, 45, 238, 347, 401.
 Southern, 309.
- Rodostethia rosea, 57.
- Rough-leg, Ferruginous, 329.
- Rupornis ruficauda, 358.
- Rynchops nigra, 79, 81.
- SAGE, John H., Eighteenth Con-
 gress of the American Ornithol-
 ogists' Union, 63-67.
- Salpinctes obsoletus, 238, 276.

- Salpinctes obsoletus pulverius*, 319.
Saltator albigollis isthmicus, 32.
 intermedius, 369.
Sanderling, 202, 266, 386.
Sandpiper, Baird's, 190, 402.
 Bartramian, 112, 329.
 Least, 199, 266.
 Pectoral, 107, 158, 202, 331.
 Purple, 107.
 Red-backed, 266.
 Semipalmated, 331.
 Sharp-tailed, 386.
 Solitary, 36, 112.
 Spotted, 36, 92, 112, 272, 340.
 Western, 266.
 White-rumped, 331.
Sapsucker, Red-breasted, 282.
 Yellow-bellied, 39, 152, 340.
Sayornis nigricans semiatra, 301.
 phæbe, 39, 234, 341.
 saya, 234.
 saya yukonensis, 312.
Saxicola ænanthe, 45, 186, 209, 275, 281.
 ænanthe leucorhoa, 186, 281, 309.
Scaphidurus, 286, 311.
Scolecophagus carolinus, 41, 267.
 cyanocephalus, 236.
Scops asio enano, 14.
 brasiliانا, 25.
Scoter, Black, 190.
 Surf, 35.
 White-winged, 264, 336.
Scotiaptex cinerea, 38, 107.
Scotothorus verapacis, 365.
Sea-dottrel, 173.
Seiurus aurocapillus, 44, 147, 149, 344, 368.
 noveboracensis, 30, 44, 147, 149.
Selasphorus platycercus, 234.
Séleys-Longschamps, Baron Edmond de, obituary of, 219, 292.
Selous, Edmund, notice of his 'Bird Watching,' 408.
Sennett, George Burritt, memorial of, with portrait, 11-23.
Seton-Thompson, Ernest, and Hoffmann, Ralph, notice of their 'Bird Portraits,' 284.
Setophaga ruticilla, 44, 148, 149, 238, 344, 402.
Sharpe, R. Bowdler, notice of the second volume of his 'Hand List of the Genera and Species of Birds,' 120.
Shattuck, Geo. C., notes from northern New York, 199.
Shearwater, Audubon's, 189.
 Dark-bodied, 201.
 Pink-footed, 201.
Shelley, G. E., notice of his 'Birds of Africa,' 122.
Shoveller, 35, 331, 332, 385.
Shrike, Loggerhead, 43, 196.
 Migrant, 343.
 Northern, 43.
 Northwestern, 177.
 White-rumped, 237.
Shufeldt, Percy W., the occurrence of the Ground Dove in Virginia, 192.
Shufeldt, R. W., notice of his translation of Collett's 'Morphology of the Cranium and the Auricular Openings in the North-European Species of the Family Strigidae,' 207; notice of recent contributions by, to our knowledge of the osteology of birds, 211; notice of his 'Osteology of the Herodiones,' 281.
Sialia arctica, 238, 276.
 sialis, 45, 254, 347.
Siskin, Pine, 41, 154, 203, 236, 342.
Sitta canadensis, 45, 198, 238, 345.
 carolinensis, 44, 345.
 carolinensis aculeata, 238.
Skimmer, Black, 75, 79.
Smith, Hugh M., Snow Bunting at sea, 195.
Snipe, English, 249.
 Wilson's, 36, 158.
Snowflake, 41, 267.
Solitaire, Townsend's, 238.
Somateria dresseri, 189.
 mollissima, 310.
 mollissima borealis, 310.
 spectabilis, 22.
Sparrow, Bachman's, 273.
 Baird's, 329.
 Chipping, 42, 151, 236, 342.
 Clay-colored, 236, 330.
 English, 152.
 Field, 42, 153, 342.
 Fox, 42.
 Grasshopper, 342.
 House, 41, 195, 249, 256.
 Ipswich, 21, 262, 267.
 Lagoon, 303.
 Leconte's, 129-134.
 Mendocino Song, 175.
 Nelson's, 268.

- Sparrow, Sandwich, 201.
Savanna, 42, 267, 342.
Sharp-tailed, 267.
Song, 42, 154, 268, 343.
Southern Sharp-tailed, 269.
Swamp, 42, 153.
Tree, 42.
Vesper, 42, 342.
Western Lark, 236, 416.
Western Savanna, 329, 397.
Western Vesper, 236, 329.
White-crowned, 42.
White-throated, 42, 152, 342.
Sparvius platypterus, 217, 299.
Spatula clypeata, 35, 358, 385.
Speotyto cunicularia hypogæa, 233, 358.
Spermophila moreleti, 15.
Sphyrapicus ruber, 282.
varius, 39, 340.
varius daggetti, 282.
varius ruber, 282.
Spinus pinus, 41, 154, 203, 236, 342.
Spizella monticola, 42.
pallida, 236.
pusilla, 42, 342.
socialis, 42, 236, 342.
Sporophila aurita, 370.
Squatarola squatarola, 266.
Stejneger, Leonhard, the two races of *Saxicola ananthe*, 186, 187; notice of his paper on the North American Wheatears, 280.
Stelgidopteryx ruficollis, 407.
ruficollis æqualis, 407.
ruficollis fulvipennis, 407.
ruficollis uropygialis, 368.
serripennis, 117, 403.
uropygialis, 407.
Stellula calliope, 403.
Sterna anæsthesia, 55.
antillarum, 55, 80, 81, 82.
caspia, 55.
dougalli, 55, 85.
elegans, 55.
forsteri, 55.
fuliginosa, 55.
havelli, 56.
hirundo, 54, 78, 79, 80, 81, 82, 83, 85, 90.
lunata, 384.
maxima, 55, 56, 79.
paradisæa, 52, 55, 90.
pikei, 56.
portlandica, 52.
sandwichensis acuflava, 55.
Stilt, Hawaiian, 386.
Stone, Witmer, sequence of plumages in the Black-throated Blue Warbler, 110; notice of his paper 'On Moults and Alleged Colour Change in Birds,' 284.
Strigidae, 316.
Striker, Big, 81, 82.
Little, 81, 82.
Strix, 316.
Strong, R. M., notice of his 'A Quantitative Study of Variation in the Smaller North American Shrikes,' 283.
Sturnella ludoviciana, 310.
magna, 40, 194, 267, 317.
magna argutula, 174, 317.
magna hoopesi, 317.
magna inexpectata, 370.
magna mexicana, 317.
magna neglecta, 109, 236, 276, 311, 317.
magna paralios, 281.
meridionalis, 281.
Sturnus vulgaris, 117, 194.
Sublegatus arenarum, 30, 363.
glaber, 30.
Sula fiber, 149.
Surnia ulula, 316.
ulula caparoch, 38.
ulula doliata, 316.
Swallow, Alaskan, 176.
Bank, 42.
Barn, 42, 200, 203, 237, 343.
Cliff, 237.
Eave, 373.
Rough-winged, 403.
Tree, 42, 200, 237.
White-bellied, 150, 199.
Swallow roosts, 400.
Swan, Whistling, 21.
Swift, Black, 394.
Chimney, 341.
White-throated, 234, 416.
Sylvania canadensis, 44.
Sylvia roscoe, 197, 198.
Symphemia semipalmata, 79, 80, 81, 82, 83.
semipalmata inornata, 310.
semipalmata speculifera, 310.
Synthliborhamphus antiquus, 21.
Syrnium nebulosum, 38.
nebulosum helveolum, 299.

TACHYCINETA albilinea, 368.
bicolor, 42, 199.
Tachypetes aquilus, 149.
Tachyphonus nitidissimus, 369.

- Tachytriorchis, 320.
 Talpacotia rufipennis, 257.
 Tanager, Louisiana, 237, 416.
 Scarlet, 42, 343.
 Summer, 273.
 Tabasco Ant, 48.
 Tanagra cana diaconus, 32, 369.
 Tatler, Wandering, 386.
 Tchitrea mutata, 193.
 paradisi, 193.
 Teal, Blue-winged, 35, 200, 232, 332.
 European, 135.
 Green-winged, 35.
 Telmatodytes, 320.
 Terenura xanthogastra, 407.
 Tern, Arctic, 52.
 Black, 75, 330.
 Common, 54, 78, 79, 82, 83-90, 333.
 Gull-billed, 79.
 Least, 75.
 Roseate, 85, 90.
 Royal, 79.
 Wilson's 75, 85-90.
 Thalurania columbica venusta, 360.
 Thamnophilus doliatus, 366.
 doliatus nigricristatus, 30.
 punctatus, 366.
 transandeanus, 366.
 Thrasher, Bendire's, 225-231.
 Brown, 44, 151, 153, 238.
 Thrush, Alma's, 309.
 Bicknell's 338, 345.
 Coast Hermit, 183.
 Hermit, 45, 111, 154, 216, 346.
 Monterey Hermit, 258.
 Olive-backed, 45, 238, 346.
 Varied, 142.
 Wilson's, 45, 345.
 Wood, 45, 216, 345.
 Thryomanes bewickii calophonus, 307.
 bewickii charienturus, 307.
 bewickii cryptus, 306.
 bewickii drymæcus, 314.
 bewickii eremophilus, 313.
 bewickii leucophrys, 311.
 bewickii nesophilus, 314.
 leucophrys, 311.
 Thryophilus modestus 368.
 rufalbus castanonotus, 368.
 Thryothorus cerroensis, 314.
 fasciiventris melanogaster, 368.
 ludovicianus, 397.
 ludovicianus lomitensis, 22, 23.
 Tinamus castaneiceps, 356.
 Tit, Tufted, 157.
 Todiostrostrum cinereum, 361.
 Todus regius, 193.
 Torrey, Bradford, *Piranga rubra* in Massachusetts, 273; notice of his 'Everyday Birds,' 279; *Melanerpes erythrocephalus* breeding near Boston, 394.
 Totanus melanoleucus, 36, 209, 266.
 solitarius, 112.
 Towhee, 151, 153, 236.
 Arctic, 237.
 Northern Brown, 306.
 San Diego, 306.
 Tringa acuminata, 386.
 alpina pacifica, 266.
 bairdii, 402.
 maculata, 107, 158, 202.
 minutilla, 199, 266.
 morinella, 173, 297.
 solitarius cinnamomea, 272.
 Trochilus colubris, 39, 341.
 tzacatl, 301.
 violajugulum, 301.
 Troglodytes ædon, 22, 44, 345.
 ædon aztecus, 238, 402.
 inquietus, 368.
 Trogon atricollis tenellus, 360.
 bairdi, 360.
 caligatus, 360.
 massena, 360.
 Turdus auduboni, 260.
 aureus, 144.
 minor, 184, 185.
 nævius, 144.
 nanus, 184, 185.
 pallasii, 186.
 Turkey, Wild, 404.
 Turnstone, 173, 331, 386.
 Ruddy, 173, 297.
 Turtle-dove, Chinese, 386.
 Turtur chinensis, 386.
 Tyranniscus parvus, 362.
 Tyrannulus reguloides, 362.
 Tyrannus griseus, 148.
 melancholicus couchi, 21.
 melancholicus satrapa, 30, 363.
 tyrannus, 30, 39, 234, 341.
 verticalis, 234.
 ULALA, 387.
 UHII, 386.
 Uria lomvia, 34, 188, 199, 209.
 troile, 209.
 troile californica, 209.

- VEERY, Newfoundland, 198.
Veniliornis ceciliae, 360.
Vestiarina coccinea, 387.
Vireo bellii, 274.
 bermudianus, 252.
 calidris, 148, 149.
 chivi agilis, 30.
 flavifrons, 43, 368.
 gilvus, 43, 343.
 gilvus swainsoni, 237.
 olivaceus, 43, 148, 149, 237, 343.
 philadelphicus, 43.
 solitarius, 43, 343.
 solitarius plumbeus, 237.
Vireo, Bell's 274.
 Bermuda White-eyed, 252.
 Blue-headed, 43.
 Philadelphia, 43.
 Plumbeous, 237.
 Red-eyed, 43, 237, 343.
 Solitary, 338, 343.
 Warbling, 43, 343.
 Western Warbling, 237, 416.
 Yellow-throated, 43.
Volatinia jacarini splendens, 32, 370.
Vrooman, A. G., discovery of the egg of the Black Swift, 394.
Vultur californianus, 299.
Vulture, Black, 150, 153.
 Turkey, 150, 153, 232, 266.
WARBLER, Audubon's, 237.
 Bachman's, 274.
 Bay-breasted, 43.
 Black and White, 43, 343.
 Blackburnian, 44, 344, 399.
 Black-fronted, 109, 306.
 Black-poll, 344.
 Black-throated Blue, 43, 110, 343.
 Black-throated Green, 44, 344.
 Calaveras, 403.
 Canadian, 44, 344.
 Cerulean, 137-142.
 Chestnut-sided, 43, 344.
 Hooded, 397.
 Macgillivray's, 238.
 Magnolia, 43, 344.
 Mourning, 44, 338, 344.
 Myrtle, 43, 344.
 Nashville, 43, 343.
 Northern Parula, 43.
 Parula, 343.
 Pine, 44, 156.
 Prairie, 106.
 Tennessee, 43.
 Townsend's, 201.
 Yellow, 43, 201, 236, 330, 343.
 Yellow-rump, 151, 152.
 Wilson's, 44, 201.
Ward, G. C. Tremaine, the Passenger Pigeon, 192.
Water-ouzel, 373.
Water-Thrush, 44.
Waxwing, Bohemian, 42, Cedar, 42.
Wayne, Arthur T., the Red Phalarope (*Crymophilus fulicarius*) on the coast of South Carolina, 271; Bachman's Warbler (*Helminthophila bachmani*) rediscovered near Charleston, S. C., 274; Sprague's Pipit (*Anthus spragueii*) again on the coast of South Carolina, 275.
Wheatear, 45, 186, 249, 275, 280.
 Greenland, 309.
Whip-poor-will, 39, 341.
Wide-awake, Gray, 384.
Widgeon, European, 135.
Widmann, O., a visit to Audubon's birthplace, 150-157.
Willet, 75, 79, 80, 81.
 Western, 330.
Williams, R. W., Jr., the Vermilion Flycatcher in Florida, 273.
Wilsonia canadensis, 344.
 mitrata, 397.
Woodcock, American, 36, 158.
Woodpecker, American Three-toed, 39.
 Arctic Three-toed, 39, 233.
 Cabanis's, 233.
 Downy, 39, 157, 233, 340.
 Hairy, 157, 272, 340.
 Ivory-billed, 280.
 Lewis's, 233.
 Northern Hairy, 39.
 Northern Pileated, 39, 340.
 Pileated, 193.
 Red-bellied, 157, 341, 404.
 Red-cockaded, 156.
 Red-headed, 39, 233, 394.
 Yellow-bellied, 39.
Worthington, W. W., a rare record for eastern New York, 395.
Wren, Aleutian, 307.
 Berlandier's, 22.
 Bewick's, 151, 152.
 Carolina, 151, 152, 397.
 House, 22, 44, 153, 345.

- Wren, Kadiak Winter, 181, 307.
 Long-billed Marsh, 331.
 Marian's Marsh, 268.
 Rock, 238, 276.
 Tabasco, 49.
 Western House, 238, 330.
 Winter, 44, 153, 345.
- Wren-tit, Coast, 308.
 Intermediate, 178.
- XANTHOCEPHALUS xanthocephalus,
 195.
- Xanthoura luxuosa, 302.
 luxuosa glaucescens, 302.
- Xema sabinii, 57, 113, 392.
- Xenops genibarbis, 368.
- YELLOW-LEGS, 331,
 Greater, 36, 266.
- Yellow-legs, Lesser, 200.
- Yellow-throat, Florida, 198.
 Maryland, 44, 110, 112, 151,
 344.
 Southern, 197.
 Western, 238.
- ZAMELODIA ludoviciana, 42, 343.
 melanocephala, 237, 402.
 melanocephala microrhyn-
 cha, 176, 313.
- Zarhynchus wagleri, 370.
- Zenaidura macroura, 37, 232, 276,
 358.
- Zonotrichia albicollis, 42, 342.
 fallax, 304.
 leucophrys, 42.
 leucophrys gambellii, 303.
 leucophrys intermedia, 303.
 leucophrys nuttalli, 303.

ERRATA.

- Page 45, line 1 at top, for '*Sitta carolinensis*' read *Sitta canadensis*.
 Page 45, line 12 from top, for '*mustelinus*' read *mustelina*.
 Page 126, line 6 from bottom, for 'published' read publish.
 Page 190, lines 9 and 12, for 'Hartet' read Hartert.
 Page 190, line 15, for 'November' read October.
 Page 193, line 9 from top, for 'Bowdish' read Bowdich.
 Page 283, line 6 from top, for '174' read 294.
 Page 283, line 15 from top, for 'Bradley and Milton' read Milton
 Bradley.
- Page 284, line 10 from top, for 'prolificness. In' read prolificness in.
 Page 289, line 3 from bottom, for 'Bowlder' read Bowdler.
 Page 297, line 11 from top, '210.1' should read 211*b*.
 Page 301, lines 6-9 from bottom should read:
439. *Amizilis cerviniventris chalconota* (OBERH.).
Amazilia cerviniventris chalconota OBERHOLSER, Auk, XV, Jan.
 1898, 32.
Amazilis cerviniventris chalconota OBERHOLSER, Proc. Acad. Nat.
 Sci. Phila. 1899, 208.
- Page 308, line 11 from top, for No. '736' read 726.

UNIV. OF MICH.
OCT 14 1901

Old
Series,
Vol. XXVI

CONTINUATION OF THE
BULLETIN OF THE NUTTALL ORNITHOLOGICAL CLUB

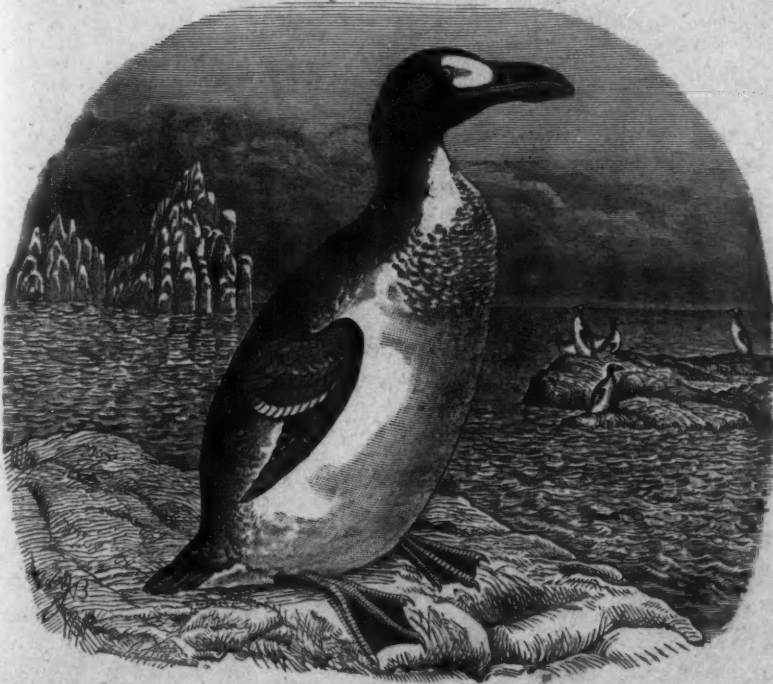
New
Series,
Vol. XVIII

The Auk

A Quarterly Journal of Ornithology

Vol. XVIII — OCTOBER, 1901 —

No. 4



PUBLISHED BY

The American Ornithologists' Union

CAMBRIDGE, MASS.

Entered as second-class mail matter in the Post Office at Boston, Mass.

CONTENTS.

| | PAGE |
|---|------|
| AN ORNITHOLOGICAL MYSTERY. By William Brewster. | 321 |
| NESTING HABITS OF THE ANATIDÆ IN NORTH DAKOTA. By A. C. Bent. (Plates IV-VI.) | 328 |
| A PRELIMINARY LIST OF THE SUMMER BIRDS OF MOUNT MANFIELD, VERMONT. By Arthur H. Howell. | 337 |
| THE ALDER FLYCATCHER (<i>Empidonax traillii alorum</i>) AS A SUMMER RESIDENT OF EASTERN MASSACHUSETTS. By J. A. Farley. | 347 |
| ON A COLLECTION OF BIRDS MADE BY W. W. BROWN, JR., AT DAVID AND DIVALA, CHIRIQUÍ. By Outram Bangs. | 355 |
| THE CLASSIFICATION OF BIRDS. By Hubert Lyman Clark. | 370 |
| A LIST OF THE HAWAIIAN BIRDS IN THE ST. LOUIS COLLEGE COLLECTION, HONOLULU, H. I., INCLUDING RECORDS OF SEVERAL NORTH AMERICAN SPECIES. By William Alanson Bryan. | 382 |
| NESTING HABITS OF THE EVENING GROSEBEAK (<i>Coccothraustes vespertinus</i>). By Francis J. Birtwell. (Plate VII.) | 388 |
| GENERAL NOTES.— Capture of Sabine's Gull in Wisconsin, 392; Snowy Heron in Alberta, 392; A New Bird for the State of Ohio, 392; A Band-tailed Hawk's Nest, 392; Nesting of the American Rough-legged Hawk in North Dakota, 393; <i>Melanerpes erythrocephalus</i> Breeding near Boston, 394; Discovery of the Egg of the Black Swift (<i>Cypseloides niger borealis</i>), 394; A Rare Record for Eastern New York, 395; <i>Acanthis linaria rostrata</i> in the Outer Hebrides, 395; The Migratory Movements of the Lapland Longspurs in North America, 396; The Western Savanna Sparrow in North Carolina, 397; The Hooded Warbler in Massachusetts, 397; Nesting of the Carolina Wren (<i>Thryothorus ludovicianus</i>) in Southern Massachusetts, 397; Massachusetts Bird Notes, 398; Maine Bird Notes, 400; Ontario Notes, 401; Additional Notes on the Birds of Okanogan (Chelan) County, Washington, 402; Manuscript of Emmons's Catalogue of Massachusetts Birds, 403. | |
| RECENT LITERATURE.— Pycraft on the Morphology of the Cassowaries and their Allies, 405; Bangs on New American Birds, 406; Bangs on Birds from the Liu Kiu Islands, 407; Chapman on New Birds from Peru, 407; Grinnell on New California Birds, 407; Babson's Birds of Princeton, New Jersey, 408; Selous's 'Bird Watching,' 408; Publications Received, 409. | |
| CORRESPONDENCE.— Early Migration of Wild Geese, 411. | |
| NOTES AND NEWS.— Nineteenth Congress of the A. O. U., 412; Obituary: Newton Dexter, Francis J. Birtwell, 413; An Australian Ornithologists' Union, 414; The Bird Club of Princeton University, 415; University of Nebraska Expedition of 1901, 416. | |
| INDEX | 417 |
| CONTENTS | iii |
| OFFICERS AND MEMBERS OF THE A. O. U. | ix |

'THE AUK,' published as the Organ of the AMERICAN ORNITHOLOGISTS' UNION, is edited by Dr. J. A. ALLEN, with the assistance of Mr. FRANK M. CHAPMAN.

TERMS:—\$3.00 a year, including postage, strictly in advance. Single numbers, 75 cents. Free to Honorary Members, and to Active and Associate Members of the A. O. U. not in arrears for dues.

Subscriptions and Advertisements should be addressed to 'THE AUK,' 30 BOYLSTON STREET, CAMBRIDGE, MASS., or to WILLIAM DUTCHER, Business Manager, 525 MANHATTAN AVE., NEW YORK, N. Y. Foreign Subscribers may obtain 'THE AUK' through GURNEY AND JACKSON, 1 PATERNOSTER ROW, LONDON.

All articles and communications intended for publication, and all books and publications for notice, should be sent to Dr. J. A. ALLEN, AMERICAN MUSEUM OF NATURAL HISTORY, CENTRAL PARK, NEW YORK CITY.

Manuscripts for general articles should reach the editor at least six weeks before the date of the number for which they are intended, and manuscripts for 'General Notes' and 'Recent Literature' not later than the first of the month preceding the date of the number in which it is desired they shall appear.

Every Ornithologist

should find the past and present publications of the Cooper Ornithological Club of California, of greatest interest and value. The proceedings of this live Western Club consist of two series:

THE CONDOR,

A 24-page bi-monthly, illustrated magazine, issued on the fifteenth of each alternate month, and aimed to fill the field of an up-to-date bird journal, publishing articles of special interest to technical ornithologists, nidologists and active field workers generally. The two volumes thus far completed outline the journal's policy and scope for the future, and it can safely be assumed THE CONDOR for 1901 will eclipse its previous record in extent and value of material published.

Vol. I (1899), \$2; Vol. II (1900), \$1.; Current Volume, \$1.

PACIFIC COAST AVIFAUNA NO. 1,

"Birds of the Kotzebue Sound Region, Alaska," by Joseph Grinnell. A large octavo 80-page publication, embracing an accurate, detailed and interesting narrative of the author's experiences among the birds of the Far North, during a year's sojourn north of the Arctic circle. The biographies of the 113 species and subspecies of birds treated in the paper are unusually valuable, and the paper is accompanied by a 3-page map of the region.

A sample copy of 'The Condor' will be mailed on application. Address

C. BARLOW, Editor and Business Manager,
Santa Clara, Cal.

THE FORESTER.

During the coming year **The Forester**, the illustrated monthly magazine of the American Forestry Association, will be more interesting and valuable than ever before. No one who cares for trees or life in the woods, or who is interested in the movement to encourage the preservation and care of the forests should be without it.

Among the contributors are Gifford Pinchot, Chief of the U. S. Division of Forestry; Dr. B. E. Fernow, Dean of the New York State College of Forestry; Henry Gannett, Geographer of the U. S. Geological Survey; Dr. John Gifford; Prof. Henry S. Graves of the Yale Forest School; Dr. C. A. Schenck, of Biltmore, N. C.; Hon. James Wilson, Secretary of Agriculture; Prof. Wm. R. Dudley, of Stanford University, Cal.; Prof. N. S. Shaler, of Harvard University; and many others of note and authority on their specialties.

Besides a number of contributed articles, each issue of the magazine will contain a record of legislation touching the interest of the country's forests (of which there will probably be a good deal during the coming year) with editorial comment, and reviews of recent publications by the most competent experts. Each number is handsomely illustrated.

Subscription \$1.00.

For sample copy send a two cent stamp to

**THE FORESTER, 202 14th Street, S. W.
Washington, D. C.**

The Forester is sent to the members of the American Forestry Association free of charge. Annual membership dues: \$2.00. Life membership: \$50.00. The Association is engaged in work which is of the greatest importance and for the progress of which all the moral and financial support obtainable is needed. To join the Association address the *Secretary*,

202 14th Street, S. W., Washington, D. C.

Bird-Lore for Christmas

No present could be more appropriate for a friend who is interested in birds, or a friend whom it may be desired to interest in birds, than **BIRD-LORE** for the coming year. As the first number of the new volume will not be issued until February 1, 1902, we have prepared as a **BIRD-LORE** Christmas Card, a full-page plate of the Cruikshank portrait of Audubon. On receipt of the subscription price to **BIRD-LORE**, (\$1.00), and the name and address of the person to whom it is wished to have the magazine sent, this card will be properly filled out and, with a free copy of **BIRD-LORE** for December, will be mailed in time to be received on Christmas Day.

Or the subscription may be sent and we will forward the magazine and the Christmas Card in blank, to be filled in and mailed by the donor.

☞ For this occasion we will make a reduction in the subscription price to **BIRD-LORE**, and offer five subscriptions for the sum of \$4.00.

Orders for these Christmas Cards should be sent at an early date, in order to ensure their delivery in due season.

Bird-Lore for 1902

ERNEST SETON-THOMPSON, who has written an illustrated article on 'The Recognition Marks on Birds,' for December **BIRD-LORE**, will write, in 1902, on 'How to Keep a Journal'; William Brewster will describe the bird voices of New England swamps and marshes; F. A. Lucas will write, with numerous illustrations, of 'The Weapons of Birds'; D. G. Elliot and Capt. C. A. Curtis, U. S. A., will contribute Recollections of Elliott Coues; and Frank M. Chapman will present a series of six fully illustrated papers on the families of Passerine birds. There will also be a series of articles on 'Bird Clubs in America,' and other important illustrated papers by Richard Kearton, Dr. T. S. Roberts, A. Radclyffe Dugmore and others.

THE MACMILLAN COMPANY.

Mulberry and Crescent Sts., Harrisburg, Pa.,

